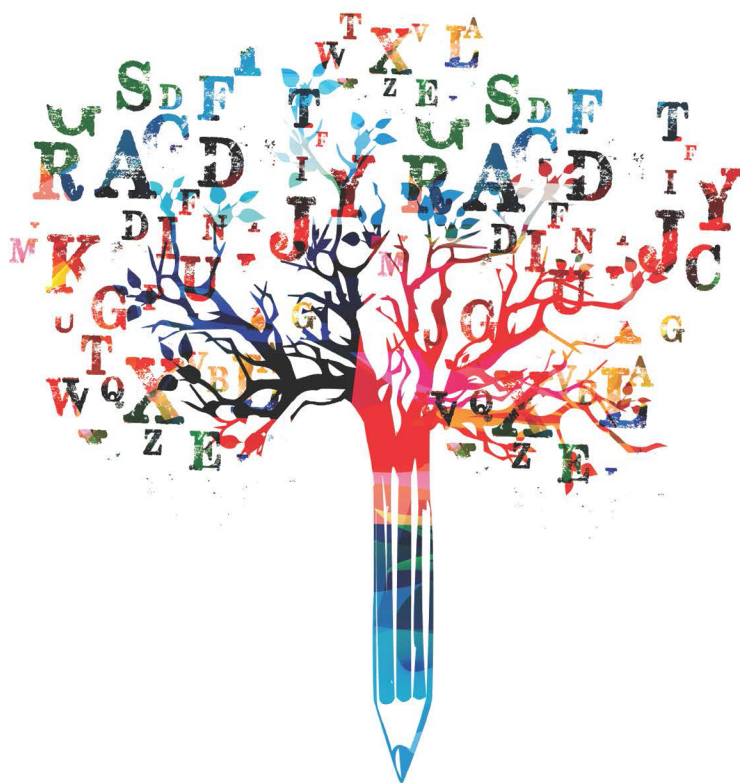


Volume 1

Encyclopedia of Linguistics

(7 Volume Set)



Marilynn Shari Firmin
Editor

Editor

LANGUAGES AND LINGUISTICS

NOVA

LANGUAGES AND LINGUISTICS

ENCYCLOPEDIA OF LINGUISTICS
(7 VOLUME SET)

VOLUME 7

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LANGUAGES AND LINGUISTICS

ENCYCLOPEDIA OF LINGUISTICS
(7 VOLUME SET)

VOLUME 7

MARILYNN SHARI FIRMIN
EDITOR



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PREFACE

This 7 volume encyclopedia set presents important research on linguistics. Some of the topics discussed herein include speech and language disorders, language development, American Sign Language, voice therapy, and aphasia.

Chapter 1 - Verbs are the best lexical items to verify the effects of motor learning in language processing. However, compared to nouns, this category has received less attention in studies about lexical disturbances in neurological diseases. Difficulties in verb/action processing have been found in patients with Parkinson's disease, suggesting that frontoestriatal and subcortical areas contribute to the semantic processing of verbs. This finding highlights the possibility of verifying the assumptions of the Embodied Cognition (EC). According to this theory, language processing of action verbs would engage areas involved in planning and execution of the actions represented by those verbs in the motor cortex. The literature in this field has pointed to conflicting results and action/verb cerebral representation, and its impact in language difficulties in Parkinson's disease have been intensively debated. These controversies may be studied in terms of the multilevel model that predicts that the design of the task will require differential access to the motor features of the verb meaning and that areas related to visual perception, particularly the lateral posterior temporal cortex play a role in semantic processing. The type of task and psycholinguistic variables need to be taken into account since they can measure different levels of semantic processing. In addition, in order to check EC assumptions, studies must contrast distinct types of verbs, for instance action vs. emotional/psychological; biological vs. non-biological; verbs requiring and not requiring tools. Another semantic feature of concern is specificity. Kim and Thompson (2004) distinguish light and heavy verbs and discuss their different speed of deterioration in neurodegenerative diseases. Considering this panorama, this chapter will present, a summary of the different approaches about action/verbs semantics, current debates about verb neural representation and an analysis of the evaluation directed to patients with Parkinson's disease. A PubMed and Scopus search was conducted in December/2014 using the terms "action verb" OR "verb" OR "verbs" AND "Parkinson's disease" with no time restriction. The authors retrieved 35 studies and selected 22 for analysis, excluding reviews and studies not related to action/verb semantics in PD. The methodology and findings of those 22 studies were analyzed and contrasted with theories that explain the neural representation of action/verb semantics, in particular the multilevel model and Embodied Cognition accounts. The challenge for new studies is to identify those semantic properties,

understand how they are related to cortical processing and develop suitable tools to analyze these features in different profiles of Parkinson's disease.

Chapter 2 - This chapter aims to acquaint the reader with the current debate on the prevalence of oral and written linguistic difficulties as a precursor of Specific Learning Difficulties (SLD). The barrier created by scientific literature in terms of the diversity of terminology regarding the definition of these pathologies – which clearly reflects the interests of various fields – has given rise to multiple nosological classifications to define the same disorder, which has in turn hampered a diagnostic classification. This situation, in addition to a historical constant of disagreement regarding the definition and identification of SLD, has led to the identification of SLD in a child who has shown no signs of intellectual, sensory, physical or perceptive impairment in their learning that would keep them from reaching the objectives for the course or corresponding academic year in which they are enrolled.

Some factors that influence the appearance of SLD are *Speech Delays* (SD) and/or *Oral Language Delay* (OLD), as well as *Written Language Delay* (WLD), especially reading difficulties, as shown in epidemiological studies indicating a high prevalence. Likewise, delays in different linguistic components (semantic and/or syntactic) also significantly affect the comprehension and assimilation of text content, leading to learning difficulties. Therefore, the authors understand the need for a more comprehensive study of the relationship between delayed linguistic components and reading comprehension and fluency, given the high rates of prevalence during the first years of school and the possible origin of academic disabilities among students with LD.

In this respect, knowledge of the prevalence of linguistic difficulties during early childhood can facilitate the early detection and prevention of LD in the student population. This is due to the fact that the majority of language and communication problems will appear in the classroom environment, which incorporates the demands and implications of the teaching and learning process.

A recent study on the prevalence of language, speaking, voice and communication pathologies observed that, among the epidemiological profile of different pathologies present until adolescence, WLLD, OLD and SD constitute the greatest percentage as compared to other linguistic pathologies, and that gender differences were also present.

From this perspective, teachers are considered the most critical and responsible factor in the educational changes and improvements for the child. Nevertheless, teachers perceive certain limitations in their ability to intervene with these students within the classroom. The authors would therefore like to provide teachers with key epidemiological tools using the “*Precede-Proceed Model*” as an early detection and prevention device for Specific Learning Difficulties (SLD).

Chapter 3 - Depending on how broadly or narrowly defined, language can include multiple processes which go well beyond speech production and comprehension. Though typical language development is a stepping stone process based on its component parts, such as phonology, morphology, syntax, and pragmatics, it quickly branches into a vehicle for broad communication, including gestures, social and affective orientation toward others, and the facilitation of our learning and thinking skills. Considering its involvement in so much of what we do, language has been proven to be an extremely complex and diffusely distributed function in the human brain. Considerable research shows that individual language process development proceeds in a very predictable manner and parallels specific areas of brain development. Research appears to support a critical period hypothesis during which the brain

is maximally sensitive to specific types of language stimulation required for acquisition of skills associated with the next developmental phase. Thus, it seems clear that both genetics and environmental factors are important. Delays in the development of language skills and acquired deviations from normal language functioning can often be diagnostic of a pathological process. Given the great specificity in knowledge regarding the many neuroanatomical structures involved in language, language symptoms can be reasonably well localized in the brain. When language development deviates from the normal timeline, clinical interventions are often essential. Most evidence suggests that earlier intervention is more efficient. There are many creative and evidenced based treatments for language delays; however, depending on the severity and duration of the delay, the amount of treatment needed and the prognosis can vary widely. In cases where a delay is extreme there are often other noted cognitive and social deficits. Some speculate that delayed language could even plausibly limit the development of many other cognitive skills. This chapter discusses the more current broad conceptualization of language development and many of the evidence-based treatments. These include behavioral interventions such as Discrete Trial Training, as well as other methods: parent mediated, narrative mediated, social communication interventions, and sensory based interventions.

Chapter 4 - Cohen and coworkers were the first to demonstrate the presence of significant difficulties in language development and/or of the evolutive trajectory of this function in subjects evaluated in their adolescence for serious psychopathology. Subsequent longitudinal studies showed that children with language and communication disorders are at risk of having social, behavioral and emotional difficulties in adolescence and adult age.

A number of different mechanisms can be invoked to explain this association. First, language is a powerful tool for processing difficulties both in the relational contest and related to the so-called “social problem solving”. Others believe that the defect in mentalization associated with a frailty of executive functions might produce a decline of language skills in individuals predisposed to develop a psychopathological disorder. Still others point out that it is possible that the deficits in language make psychopathological problems that otherwise would have remained sub-threshold more evident and serious, as they reduce the relational exchanges. Finally, it has been hypothesized that there may be other mechanisms common to both the difficulty of the language and the psychopathological disorders, in terms of both genetic aspects and neurocognitive functions (e.g. working memory deficits).

In any case, it is evident that an atypical functioning of a given subject in the field of language is a relevant factor for the treatment, especially when the treatment method largely uses the word to induce a change in mental functioning (as in most psychotherapies).

Chapter 5 - This chapter examines the role played by intercultural nonverbal communication competence of Australian university staff members working in a culturally diverse setting and its impact on the management of intercultural working relationships with the students. The discussion starts with a critical review of relevant nonverbal communication theories (e.g., paralinguistics, proxemics, and kinesics). Then it focuses on various body language challenges academic and professional staff members working in Australian universities face on a daily basis while facilitating and working with students who come from diverse linguistic and cultural backgrounds. The body language facing academic staff members inside classroom is challenging due to intricate intercultural differences and potential intercultural misunderstanding. It is argued that an issue common to both academic and professional staff members is that some of them may have insufficient

intercultural nonverbal communication competence and few have received intercultural nonverbal communication training relevant to their work roles though their verbal communication skills are sound. It is believed that competent intercultural nonverbal communication is crucial and indispensable for both academic and professional staff members working in Australian university context because Australian higher education sector has such a linguistically and culturally diverse environment and it has an internationally high-stake profile with some universities having as many as 20% or more international students from different cultures. This has created pedagogical implications that students are likely to achieve better learning outcomes and have better learning experience when their teachers are able to demonstrate their intercultural nonverbal communication competence. It is the same case with professional staff members whose competent intercultural nonverbal communication skills can accommodate students' various needs (e.g., psychological, emotional, and social). In a word, Australian university staff members' good intercultural understanding (language and cultural knowledge about international students, so-called clients) and effective nonverbal communication skills will contribute to presenting their universities a positive public image, internationalizing Australian higher education industry and making it competitive globally.

Chapter 6 - Having in mind the importance of segmental duration from a perceptive point of view, a specialized module for modeling segmental duration in natural speech is a very important component of a text-to-speech (TTS) system in order to produce high quality synthetic speech which sounds natural. In this study various machine learning techniques were applied for phone duration modeling of the Serbian language. In this chapter different phone duration prediction models for the Serbian language using linear regression, tree-based algorithms and meta-learning algorithms such as additive regression, bagging and stacking algorithm are presented. Phone duration models have been developed for the full phoneme set of the Serbian language as well as for vowels and consonants separately. A large speech corpus and a feature set of 21 parameters describing phones and their contexts were used for the prediction of segmental duration. Phone duration modeling is based on attributes such as the current segment identity, preceding and following segment types, manner of articulation (for consonants) and voicing of neighboring phones, lexical stress, part-of-speech, word length, the position of the segment in the syllable, the position of the syllable in a word, the position of a word in a phrase, phrase break level, etc. These features have been extracted from the large speech database for the Serbian language. The phone duration model obtained using additive regression method outperformed the other models developed for the Serbian language within this study using different modeling techniques. This model obtained for the full phoneme set outperforms the second best model by approximately 1.3% and 1% in terms of the relative reduction of the root-mean-squared error and the mean absolute error, respectively.

Chapter 7 – Purpose: Inferential comprehension is an important aspect of language development in the early years and is strongly associated with future academic success. Yet, this language ability has not been extensively documented in young children with SLI. Information in that regard would be helpful in guiding assessment and intervention in speech-language pathology. This study aims to collect data on inferential abilities of 5-year-old children with SLI.

Methods: Sixty-four children, distributed in three groups, participated in the study: 16 children with SLI were compared to 26 age-matched and 22 language-matched typically

developing children. Inferential abilities were examined with pre-determined questions inserted into a dialogic reading task. The performance of the three groups of children was compared according to the inference types and the quality of responses provided.

Results: Children with SLI obtained similar results to the younger language-matched group and weaker results than the age-matched group. Significant differences among the three groups were observed for both inference types and quality of responses.

Conclusions: This study provides new information about the inferential abilities of children with SLI and typically developing children aged 4 to 5 in the context of dialogic reading. The results offer some foundation for planning assessment and intervention in the area of inferential comprehension with young children.

Chapter 8 - This chapter describes a speech and text translator from Spanish into Spanish Sign Language, trying to solve some of the problems that deaf people find when they try to access and attend to specific training courses. The application uses the voice as input for translation, but it also translates text from PowerPoint slides used by the teacher to explain the lesson concepts. In addition to the translator system, a virtual avatar has been created and integrated in the final application to visually represent the signs translation. A set of real-time avatar animations representing the signs are used, with individual words and common used phrases in the training environment. The process to create, adapt and reproduce the movements and mix them in real time is described. The tool is based on a client/server architecture where teacher and deaf students have their own application to help both in teaching and learning during a class session, also facilitating the communication between them using a chat. The system can be used in courses where deaf and hearing people are sharing the same material and classroom, so deaf people can attend and follow the class without problems, improving the integration of this group of people to specific academic areas. The tool has been tested to obtain direct information with a group of deaf people from the Deaf Association of Seville.

Chapter 9 - The authors evaluated the perceived communication ability of 25 individuals with chronic traumatic brain injury (TBI) and 25 age-sex-education matched normal controls using an open questions interview format. Each participant completed the interview, which consisted of 21 open questions such as ‘What kind of people are your parents?’ as well as other linguistic and cognitive tests. Using audio recorded versions of the interviews, the authors rated their answers using the 27 subscales of the La Trobe Communication Questionnaire (LCQ), and evaluated the relationships between LCQ scoring and the other tests. There was a significant difference between participants with and without TBI for 18 of the 27 subscales of the LCQ. As for the 4 factors (Initiation/Conversational flow, Disinhibition/Impulsivity, Conversational Effectiveness, and Partner Sensitivity), the total score for each differed between the 2 groups. Furthermore, LCQ Factor 3 (Conversational Effectiveness) showed a significant correlation with duration of loss of consciousness. No measurements of linguistic and cognitive ability showed a significant relationship with LCQ factor scores. The authors’ findings suggest that communication difficulties can persist for years after injury, which may be relatively independent from other cognitive abilities.

Chapter 10 - The study of nonverbal behavior is important in objectifying and verifying the diagnosis of mental disorders. Also it is important in establishing correct diagnosis of affective disorders (anxiety and depression) in patients with type 1 diabetes using clinical and ethological methods. Ethological analysis of the behavior of children and adolescents with diabetes was conducted using adapted to the objectives of the study “Glossary of nonverbal

human behavior”, which includes basic units, simple and complex forms of behavior, as well as their dynamics. Formalization of the severity of behavioral symptoms was carried out in accordance with the scale of human ethological features (Human Ethological Signs Scale, HESS), which provides a 7-point score for ethological expression. The authors have revealed and ranged several nonverbal patterns recorded with a frequency of more than 90%, which were of particular importance for ethological verification of anxiety in children and adolescents suffering from diabetes. The authors’ results show that ethological analysis of nonverbal behavior in children and adolescents with type 1 diabetes significantly increases the information content of the clinical examination, contributes to objectification and verification of clinical and psychopathological data concerning the presence and severity of affective disorders caused by diabetes and allows one to confidently discriminate between depressive and anxiety disorders in the absence or even loss of verbal contact with the patient.

Chapter 11 - Religious beliefs can be expressed in distinct language varieties – one such variety is the language of the sermon which Crystal and Davy (1969) say, “Has more in common, stylistically with other forms of public speaking.” Being a form of moral statement aimed at dictating a certain kind of behavior through such strategies as stories, or examples, a sermon’s manner of presentation is formal. This chapter focuses on how content is structured in formal KSL discourse – a sermon. It focuses on grammatical cohesion. Grammatical cohesion is about how content is structured through textual features that link episodes together in discourse. In discourse, there are elements that are not part of the content but they help in guiding the reader/listener to interpret information. The flow of the topic can therefore be understood through guidance from structural organization, or through cohesive devices. The structuring of content in discourse through the use of structural devices or linguistic features that mark transition help in establishing cohesion. This chapter is concerned with how cohesion is established in a KSL sermon through reference, substitution, ellipsis, discourse markers and conjunctions.

Chapter 12 - A novel computer-based adaptive test of ASL ability known as the American Sign Language Discrimination Test (ASL-DT) recently has been developed at the Rochester Institute of Technology's National Technical Institute for the Deaf (RIT/NTID). The ASL-DT is a measure of learners’ sign recognition ability. Specifically, the test measures the ability to discriminate phonological and morphophonological contrasts (minimal pairs) in ASL. Both the item content and test administration methodology differ substantially from procedures currently used for the assessment of second language (L2) learners’ sign language abilities. Using a paired comparison discrimination task and Rasch analysis to model item difficulty and person ability, the ASL-DT provides an objective, valid and reliable measure of ASL skills that can serve as a proxy measure of ASL proficiency.

In this chapter, the authors report the results of a study designed to enlarge the ASL-DT item pool to expand the effectiveness of the test across the full range of L2 learners’ ASL abilities. A set of 280 items was administered to a sample of 178 adults having ASL proficiency levels extending from beginners to native signers. Forty-eight of the items were used in previous research, and 232 items were newly developed.

Goals of the study included providing additional evidence of the test’s reliability and validity, as well as providing preliminary evidence of the effectiveness of the adaptive test. The chapter builds upon previous work indicating that evaluation of learners’ ability to recognize linguistic contrasts can provide useful information about their acquisition of ASL as well as previous work indicating that the ASL-DT may provide a useful complement to

measures such as the Sign Language Proficiency Interview (SLPI) and the American Sign Language Proficiency Interview (ASLPI) in comprehensive sign language assessment programs.

Chapter 13 - The way in which an individual communicates changes based on various conversational aspects. Speakers adapt the form and content of their messages based on their judgments of what the listener knows and needs to know. Familiarity of a conversational partner affects verbal and nonverbal communicative behaviors. This is change in register, or language style, and is indicative of the ability to adapt to the listener. This study examined the effects of familiarity and the use of American Sign Language in deaf humans' conversational behaviors. Participants were deaf adults either living at or clients of a deaf assisted living facility. Participants were videotaped interacting with a conversational partner for 4 min each while playing a game. There were two conditions of trials: the partner was familiar versus unfamiliar to the participant. Two signing behaviors were measured: average duration of sign and reiteration of sign. All participants' duration of sign and reiteration of sign were significantly longer when interacting with an unfamiliar conversational partner. This research provides evidence for the linguistic aspects of ASL that are like spoken languages. These results add to research showing difference in conversational register in response to different types of partners.

Chapter 14 - In the field of American Sign Language (ASL) pedagogy, the most popular teaching method seems to be the Direct Experience Method (DEM). DEM encourages teachers to use ASL with the support of pictures, mime-pantomime, objects, and/or scenarios to teach vocabulary, language structure, and concept rules. Advocates of DEM discourage using English as a learning tool in the classroom. Studies in the field of second-language acquisition (SLA) show mixed results; some claim that only the target language should be used in the classroom while others argue that some use of the first language (L1) in the second language (L2) classroom helps students learn better. This study compared DEM with a modified DEM that includes written English as a learning tool to see which approach is more effective. The results suggested that the participants taught through DEM with written English support outperform those who are taught strictly with DEM and no written English. This study can help teachers understand the potential benefits of using minimal amounts of a student's native language in L2 classrooms. Limitations and recommendations for future studies are also highlighted in this chapter.

Chapter 15 - Language represents an intriguing and challenging topic, having fascinated mankind since its dawn. In the current study, the authors' aim is to show the shortcomings of classical single-factor/unilateral theories of word learning, lexical acquisition, and language development, that generally tend to restrict these processes to single causes, constraints, factors or principles. Such theories imply a unilateral, linear growth pathway of language learning, acquisition, and development. Participants were 128 Moroccan children, 71 boys and 57 girls, aged between 4 and 12 years, all belonging to the social middle class. They lived in Taza city, capital of Taza province, a city in northern Morocco, 120 kilometers east of Fez, with a population of approximately 300,000 citizens, and surrounded by the Rif and Middle Atlas mountains. They were exposed to the two tasks, namely to the task of distinguishing between the appearance and the reality of a word and to the "False Belief Task on Word-Concept". The authors borrowed both tasks from the theory of mind and tried to adapt them to the field of linguistics, aiming at discovering the child's ability to distinguish between the *signifier* as an acoustic-linguistic reality, the *signified* as a

mental entity and the *reference* as a physical/material entity. Findings of the current study support the pluralistic mentalist word theory.

Chapter 16 - Method of comparative linguistics based on comparison of lexis allows making different conclusions about the genetic classification of the same language. When different conclusions are based on the same methodology it is the best evidence that such methodology (comparison of lexis) is irrelevant. Language isn't a heap of lexemes, but is ordered pair $\langle A; \Omega \rangle$ where A is set of grammatical meanings and Ω is set of positional distributions defined upon A . On the base of such understanding of language was elaborated Verbal Grammar Correlation Index (VGCI). The main idea of VGCI is simple: more closely related languages have more alike sets of grammatical meanings and their common meanings are distributed in more alike positions, so the index of correlation of more closely related languages is higher. VGCI is the direct comparison of languages which exist/existed in reality. VGCI works with pure structures (it doesn't use any reconstructions or comparison of material exponents). Tests of VGCI on the material of firmly assembled stocks (Austronesian; Indo-European; Sino-Tibetan) showed the following: if value of VGCI is about 0.4 or higher it means that compared languages are related; if value of VGCI is about 0.3 or lower it means that compared languages aren't related. With use of VGCI have been found relatives of Ainu language (Great Andamanese language and Sino-Tibetan stock) and has been proven relatedness of Austronesian and Austroasiatic stocks. VGCI can be extremely useful in the fields of genetic classifications of indigenous languages of the Americas, Papuan languages and Australian Aboriginal languages.

Chapter 17 - More and more international students come to the United States to study in higher education. Due to the increasing number of the population, international students are considered crucial for the economic and social impact on academia in the U.S. For instance, they have contributed more than 30.8 billion dollars to the economic vigor of the U.S. higher institutions and their communities. However, international students' adaptation may not be successful due to several reasons. One of them would be their language proficiency—in particular, productive language skills: writing and speaking. In the academic setting, many international students struggle with their written assignments in English. Acknowledging the international students' challenge of academic writing in English, this study investigated international graduate students' academic literacy adaptation via corpus research. The use of lexical bundles was examined as one of the academic literacy adaptation indicators in this corpus-based study. The results revealed that the students did not use stance lexical bundles, indicating that they may not express their own voices in critical reviews. Rather, they tend to write carefully to reflect the original articles. This study suggests that we should view international students' academic literacy adaptation with larger corpus data. Further implications of the findings are discussed.

Chapter 18 - The chapter investigates the role of the implementation of the multisemiotic theory through the analysis of the Orthodox Patriarchs' photographs. The research is based on the multisemiotic theory by Kress and van Leeuwen and supports the view that semiotic codes are used in specific historical, cultural and institutional contexts. It is customary for people to communicate the meaning referring to various codes, depending on the contexts, as codes are not only planned, taught, justified, but also criticized. The authors of this chapter make an attempt to prove the hypothesis that Russian and Indian respondents code similar photos differently due to their cultural/ideological backgrounds. According to Kress and van Leeuwen, pictures are images that convey an interactive meaning. Thus, the main focus of the

research is on the image viewer interaction. The present study examines the data obtained from 526 official photographs of the Patriarchs and consists of several stages. At the first stage two groups of coders (Indian and Russian) were created. The selected groups were provided to code the collected corpus of photos (in total 526 photographs) autonomously. In case of discrepancies between the coding images, the agreement was terminated by two national coders collaboratively. At the second stage, the semi-structural interviews with the coders were conducted. The interviews allowed to identify and reveal similarities and differences in photo perception. The results of the study show, that the multisemiotic theory can be entirely employed and serve as an effective tool in image analysis within different cultures through identifying the interpersonal (interactive) metafunction. As the research demonstrates limitations like small amount of studied samples and a low number of Indian participants' opinion provided in the Russian Federation, further research in India is recommended.

Chapter 19 - This chapter is dedicated to the formation of philosophical terminology in the history of Early-Modern Ukrainian culture. Two philosophical concepts—*dobro* and *blaho* (добро and благо)—are the focus here. Both are related to notions of good and wellbeing, but contextual nuances may affect their discrete meanings rather significantly. My main goal is to track the differences between them and discover the rationale behind them. The author consider the manner in which these two words functioned in the works by the prominent 18th century Ukrainian philosopher Hryhorii Skovoroda. My study is based on a close reading of thirteen of his colloquies. In the process, the author has also tackled the problem of translation posed by these complicated terms.

My study has led to the following conclusions: 1) Skovoroda uses the word *blaho* when discoursing about the Creator, the Sacral World, and reflections of the sacral in profane human life. In such contexts he uses *blaho* as a philosophical concept. 2) Skovoroda reserves the term *dobro* for the profane sphere, while describing things that are positive from a moral point of view. In such cases, the semantic field of the word is clearly defined, though it can hardly be called a philosophical term. 3) The common, conversational application of *dobro* does not have clearly defined boundaries and as such it does not represent a discrete concept. 4) When translating Skovoroda's works into other languages, it is desirable to select the closest equivalents of each term. For example, the Greek κάλλος (τὸ κάλλον) or τὸ εὖ and the English *Everyday Good* are good analogs for *dobro*. On the other hand, the Greek τὸ ἀγαθόν and the English *The Highest Good* or *The Ultimate Good* closely render *blaho*.

Chapter 20 - The aim was to investigate the relationship between morphological awareness and reading in a language environment which is phonologically transparent and morphologically challenging, i.e., the Czech language environment. The sample consisted of 171 typically achieving elementary school students (3rd to 6th graders). Morphological awareness and phonological awareness both had comparable influence on reading across all age levels, from the lowest (3rd graders) to the highest (6th graders). Morphological awareness affected reading speed and accuracy more than phonological awareness. Paradoxically, morphological awareness affected reading comprehension less than phonological awareness – authors interpreted this to be due to superficial reading style which manifested itself regardless of student age, gender or IQ. Implications for improvement of reading were discussed.

Chapter 21 - Research has indicated that vocabulary depth and breadth are strongly correlated with reading comprehension and, consequently, with academic achievement.

Recent research has demonstrated that vocabulary can even predict achievement up to 10 years later. Some theoretical models, such as the simple view of reading or the multicomponent view of reading have received extensive empirical support and provided a clear insight into the relationship between reading comprehension and other linguistic variables, including vocabulary. In the context of these frameworks, studies have explored if vocabulary has a direct effect on reading comprehension or if the relationship between both variables is mediated by word reading and listening comprehension. The results generally seem to support a mediation effect; however, more studies are needed in different orthographies and grade levels. Additionally, results of other studies have indicated the existence of reciprocal relationships between the development of vocabulary and different reading abilities, as well as between the development of vocabulary and the comprehension of oral language. The implications of these findings for the design of interventions and for the planning of reading instruction are discussed.

Chapter 22 - In the past few decades much research attention has been given to determining the effects of incidental vocabulary learning through negotiation for meaning on second or foreign language (L2/FL) vocabulary gains in a face-to-face (F2F) environment since vocabulary knowledge in L2 or FL is considered an important skill in order to have effective communication skills or good academic performance. In this line of inquiry, the nature of technology- or computer-mediated communication makes enhanced incidental learning feasible. This article aims to discuss relevant underlying theories and review previous empirical studies on language learning in both F2F and synchronous computer-mediated communication (SCMC).

Chapter 23 - Vocal fold nodules are a functional voice disorder associated with voice misuse and abuse. They are benign masses, typically located on the membranous aspect of the vocal fold. Voice therapy is a process that aims to bring voice to a level of fitness that can supply occupational, emotional and social needs, knowing that not all patients will achieve a normal voice. Voice training usually consists of a combination of “direct” and “indirect” treatment techniques. Direct techniques focus on the underlying physiological changes needed to improve an individual’s technique in using the vocal system. These techniques are aimed to modify and/or improve vocal fold closure (adduction), respiratory patterns, resonance, pitch and articulatory tension. In contrast, indirect procedures concentrate on contributory and maintenance aspects of the voice disorder and may involve relaxation strategies, counselling and explanation of the normal anatomy and physiology of the vocal tract, explanation of the casual factors of voice disorders and voice care and conservation.

Chapter 24 - Speech and Language Pathology interventions in critical care purport to improve patient care and patient outcomes by addressing the risk for aspiration due to iatrogenic dysphagia related to tracheostomy tube placement, ventilator dependency and critical illness myopathy. Many Speech Pathology recommendations address NPO status, need for alternative feeding via Corpak tube and need for PEG tube placement. A retrospective analysis of 20 patients admitted to the various medical neurosurgical and surgical ICU’s analyzed patients from two groups: those who were kept NPO until a Speech and Language Pathologist assessed swallow function and those who had an oral diet assigned by the medical team without an initial formal Speech Pathology swallow assessment. Among the parameters investigated were LOS in the ICU, need for re-intubation, number of NPO status days, recommendation for Corpak tube or PEG tube and discharge status with respect to oral feeding, tube feeding and modified diet.

Chapter 25 - Children with speech sound disorders (SSD) dominate the caseloads of many speech and language pathologists (SLPs) and form a heterogeneous group. The clinical practice with children with SSD involves several methods and theoretical assumptions. Different procedures should be considered in the assessment of children with SSD, e.g., case history, single word test, stimulability, oral motor-speech, phonological analysis (linear and non-linear), phonological awareness, syllable/ word shapes, intelligibility. Also, a large number of intervention approaches are available for children with SSD, for example, minimal opposition contrast therapy, traditional articulation therapy, core vocabulary, cycles approach, phonological awareness. It has also been suggested that some intervention approaches are more effective for some SSD subgroups.

More recently SLPs are also encouraged to use the International Classification of Functioning, Disability and Health (ICF), or the International Classification of Functioning, Disability and Health Children and Youth Version (ICF-CY) in order to contemplate not only the speech disorders (body structures/ functions) but also its impact in person's activities and participation and the contextual factors (environmental and personal) that affect communication. As professional associations suggests ICF can help SLPs using a common terminology system by adaptation of many classifications that are already in use.

Since clinicians have limited time and access to analyze all of the relevant studies about assessment and intervention for children with SSD and incorporate ICF in their clinical practice, the authors intend with this chapter to guide them to implement best practice for children with SSD in terms of clinical process (since case history to intervention outcomes) and include ICF terminology in all process. Specifically the authors will present the *SSD protocol guide for SLPs*.

Chapter 26 - Special educators often promote young children's pretend play abilities with play intervention methods because of the observed relationship between play skills and cognitive, social, and language development. In a 1993 study, teachers reported that approximately 75% of children with language disorders need assistance with social play skills. However, in his 1997 review of research on the symbolic play skills of children with language disabilities, M. W. Casby discovered play abilities not to be very lacking in these children. Most importantly, their capabilities for using symbolic ideas in play may be similar to those of children without language disabilities, revealing "a symbolic *performance* deficit more so than a symbolic *competence* deficit. In pretend play, difficulties with language consistently get in the way of making play themes and roles explicit. Similarly, Guralnik found that children with mild language disabilities tend to progress like their peers in terms of play, steadily transitioning from solitary to parallel to social play, for example, but simply taking longer to do so.

There is a growing body of evidence supporting the role not only of language proficiency in pretend play but also of pretend play in the acquisition of language. Specifically, the use of a variety of props and objects, combining multiple roles and themes, and creating pretend scenarios provide the best opportunities for fostering language growth. Using clearly defined, measurable language goals, the speech-language pathologist (SLP) can promote language growth by working through a pretend play developmental hierarchy. Initially, realistic props not only expand vocabulary of common objects and their functions but also help children maintain their roles and remember their play scenario while acting out activities of daily living. As pretend play advances, props become more symbolic, often taking on more than one function during play (e.g., a box used as a boat can be flipped over to be used as a cave).

The SLP progressively introduces these open-ended and multi-functional items as a child's linguistic structures emerge and evolve so as to establish their relationships. Eventually, children will learn to make their own props (e.g., play dough can be shaped into a pizza). This chapter offers the SLP a play toolkit that implements a hierarchy of pretend play techniques to advance the linguistic competence of language-delayed preschoolers.

Chapter 27 - Background: The literature is equivocal on whether children with protracted phonological development (PPD) are at risk for literacy acquisition, making it challenging to provide relevant evidence-based phonological intervention. Differences in researchers' definitions of PPD have possibly contributed to the contradictory outcomes.

Purpose: The purpose of the meta-analysis was to determine the consistency of word-level literacy differences for children with and without PPD, and whether such differences are moderated by definitions of PPD.

Method: Eligible studies had measured at least one word-level literacy construct in school-aged children with and without PPD. Fifty-two evaluated papers generated 64 independent samples to examine: *Phonological awareness (PA; n = 20)*, *Word decoding (DEC; n = 17)*, *Fluency (FL; n = 4)*, *Nonword decoding (NWD; n = 9)* and *Spelling (SP; n = 14)*. Multiple regression analysis of a model that included all constructs was significant, $F(4,60) = 85.96, p < .001$ ($t = 5.71, p < .001$). Sample sizes allowed moderator testing for *PA*, *DEC*, *NWD*, and *SP*. A random effects model was used to compare *mean unbiased d* (weighted by the *inverse variance* and *Random Effects Variance Component*) on the *Q*-statistic ($p < .05$).

Results: For *unbiased Cohen's d*, *95% Confidence Intervals* and *95% Credibility Intervals* were significant for *PA* ($d = .85$), *NWD* ($d = .50$), and *SP* ($d = .84$), but not *DEC* ($d = .63$) and *FL* ($d = 3.04$). Cultural context was a significant moderator of *SP*, suggesting dialectical influences. In defining PPD, age at literacy evaluation, severity/sub-type and resolution of PPD significantly moderated *NWD* ($Q = 14.21$) and *SP* ($Q = 8.00$). Complexity of speech context, particularly inclusion of multisyllabic word (MSW) evaluations, was a significant moderator of *PA* ($Q = 4.85$), *DEC* ($Q = 4.14$) and *SP* ($Q = 5.66$). Differences between children with and without PPD were greater in initial phases of childhood literacy compared with later phases.

Conclusions: In both initial and later phases of childhood literacy, early spoken phonological intervention seemed relevant to mitigating differences between children with and without PPD, although results were limited by the number of studies examined. To define PPD, spoken MSW phonology appeared important; a theoretically grounded continuous metric could increase study power, whether or not categorical samples are available.

Chapter 28 - This chapter will report on a large patient population (est. 20,000 from 1992-2013) from the Beaumont Health System (Michigan) which had been tracked consecutively on two different clinical outcome programs since 1992. The population includes inpatients and outpatients treated at multiple hospital and rehabilitation centers. Adults and children with communication disorders were tracked utilizing a customized clinical outcome software program (The Beaumont Outcome Software System ©, BOSS) with a large clinician based staff. After ten years the Speech-Language Pathology Department, Beaumont Health System transferred their outcome program to the American Speech-Language Hearing Association's National Outcome Measurement System ©, NOMS). This chapter reports and compares the two clinical outcome systems (BOSS© and

NOMS©) and discusses how outcome data contributes to Speech-Language Pathology management.

Chapter 29 - The protocol for the evaluation and treatment of young adults with cleft palate at a Cleft Palate Center in Santiago, Chile is described. All the patients studied with this protocol were young adults present with residual velopharyngeal insufficiency (VPI) after palatal repair. All patients underwent a complete speech evaluation. Surgery for correcting VPI was planned individually in each case according to findings of videonasopharyngoscopy (VNP). All cases were operated on with a superiorly based pharyngeal flap. The surgical procedures were performed by the same surgeon in all cases. Surgical outcomes of velopharyngeal function (VPF) were analyzed with postoperative VNP and a speech evaluation. Patients with normal articulation before surgery showed adequate VPF one month after the pharyngeal flap was performed. None of these cases required Speech & Language Pathology (SLP) treatment. None of the patients with compensatory articulation disorder (CAD) preoperatively showed adequate VPF one month after the pharyngeal flap operation. All these cases required SLP treatment including biofeedback with VNP. After a six-month period of SLP treatment and biofeedback, sixty – three percent of these patients achieved similar results as the group of patients with normal articulation before surgery. After a follow-up period of 6 months, a total of 79% of the cases showed satisfactory results of VPF during speech. Most patients showed good compliance and motivation for treatment.

Chapter 30 - Children with cleft palate (CCP) may be at risk for articulation disorders. These articulation patterns are known as compensatory articulation disorder (CAD) and are generally regarded as compensatory behaviors secondary to velopharyngeal insufficiency (VPI). Some authors consider these behaviors as a phonologic disorder. Whole language principles consider that there is an interaction between the phonological rules and other language rule systems. An articulation problem is far more complex in nature than a phonetic analysis would suggest, and during intervention, phonologic information should not be separated from the other areas of language, such as pragmatics or syntax. Thus, within the same activity, several pieces of information about all areas of language, including phonologic information are provided. Scaffolding strategies can be useful for correcting placement and manner of articulation. Sometimes, it is difficult to know which strategy would be best option for a specific moment. Few authors have specified the expected time to apply each strategy in order to improve effectiveness. However, when studying the efficacy of these strategies for treating CAD in CCP, some result more adequate depending on the specific stage of speech development or severity of articulation impairment. In this chapter some scaffolding strategies for phonologic intervention will be described and some ideas for using them in communicative situations in relationship with higher organizational levels of language processing.

Chapter 31 - Specific Language Impairment (SLI) occurs in 6.3% of children, twice as much in males than females. The typical range of prevalence of SLI during the preschool/early school years is between 2% and 8% with an overall median prevalence of 5.95%. SLI involves delays or deficits in expressive or receptive language development, or both. In the case of the expressive language impairment (ELI), children's language is characterized by small vocabularies; short, incomplete sentences; and confusing or disorganized conversations. ELI may involve difficulties with the form of language (phonology, morphology, syntax), the content of language (semantics), and/or the function of language in communication (pragmatics).

Deficits in phonology may include difficulties with early speech sound production, and/or weak phonological awareness skills (i.e., rhyming, sound isolation, segmentation, and blending), resulting in struggles with reading and writing. Deficits in morphology and syntax may include late use of word combinations, shorter utterances in words with errors often occurring on verbs (especially verb endings, auxiliary verbs, and past tense marking of regular and irregular forms), function words, pronouns, plurals, and later-developing prefixes/suffixes with difficulties in reading and understanding the meaning of words. Impairments in semantics may include poor vocabulary use; word-finding difficulties; using synonyms/antonyms, multiple-meaning words, and figurative language (e.g., idioms, metaphors, proverbs, humor, poetic language); poor organization of narratives and expository discourse that impacts ability to convey intended meaning. Difficulties in pragmatics may include difficulty expressing ideas, feelings, and personal experiences or difficulty initiating/sustaining conversations.

The purpose of this chapter is to review the most relevant research published that informs the definition, identification, and treatment of expressive language impairment (ELI) in children ages 3 to 10 years, with a focus on phonetic and phonological interventions. Early identification and treatment of ELI is crucial for several reasons. First, the Common Core State Standards Initiative (2015) emphasizes the importance of oral language and learning to read and write. Grade-specific morphological awareness standards begin to appear as early as 1st grade, specifically in the areas of Language Knowledge, Vocabulary, and Reading Phonics/Word Recognition. Second, adequate phoneme awareness appears critical to speech production and early reading success for children with speech impairment.

Targeted areas of intervention for expressive language deficits (ages 3 to 10) include but are not limited to phonological interventions such as increasing consonant repertoire, decreasing the use of phonological processes (e.g., final consonant deletion, fronting), and enhancing phonological awareness skills (e.g., rhyming, blending, segmenting, and elision). Timely implementation of such interventions, wherever the existing language skills may be on the expressive communication continuum, will benefit children's short-term as well as long-term language, literacy, and social-emotional skills.

Chapter 32 - One of the central issues in contemporary phonetics is that of coarticulation. Speech segments do not and cannot occur isolated in real speech. As elements of a multisegmental utterance in continuous speech, all segments have neighbors which exert a certain degree of influence upon them. The vast array of articulatory adaptations that occurs as a result of the influence of one phonetic structure on another is what constitutes coarticulation in its broadest sense. Because of its ubiquitous nature in continuous speech, coarticulation has been and continues to be a central research area in experimental and theoretical articulatory phonetics. Naturally then, any integral theory or model of speech production, and to a lesser degree speech perception, must account for coarticulation. In this chapter the authors provide a general introduction to coarticulation, to the techniques used to measure it, and to the major theoretical and experimental contributions in explaining the nature and principles that govern it. Depending on the theoretical approach, the definition and scope of coarticulation may vary significantly, thus the authors aim to review and assess some of the more influential models of coarticulation, which constitute a fundamental part of contemporary phonetics. Theories and models of coarticulation also have significant consequences on phonological theory, especially the phonology-phonetics interface. Modelling coarticulation is central to understanding how the categorical, timeless and

context-independent units suggested by phonology and the gradual, dynamic and context-dependent characteristics of continuous speech are related to each other. Therefore, in this chapter the authors also explore the place of coarticulation in the phonology/phonetics dichotomy, relating coarticulation to what may in essence be viewed as its phonological counterpart – assimilation.

Chapter 33 - Velopharyngeal Insufficiency (VPI) is a disorder of resonance and speech which affect all individuals with cleft palate. VPI can occur with or without compensatory articulation errors. Several intervention methods have been reported for treating compensatory articulation errors in patients with cleft palate. Two of the most commonly used of these intervention modalities are a phonologic based intervention and a phonetic or articulatory intervention. Although both modalities have been reported as being effective, it seems that a phonologically based intervention can more readily enhance to carry over the adequate articulation placement into connected speech. The reason for this advantage is that phonology addresses not only the peripheral aspects of speech production but higher levels of linguistic organization. Thus, addressing compensatory articulation errors in a more linguistically based context, can usually be more effective for acquiring and using an adequate articulation placement during connected speech.

It is necessary to appropriately classify the severity of the compensatory articulation errors, with especial focus on the response to speech pathology intervention strategies. Also, the selection of phonologically based strategies to be used during the speech intervention, seem to enhance effectiveness of the specific strategies for correcting articulation placement.

This chapter addresses how an approach based on phonological principles can be a reliable method for the speech intervention in children with cleft palate and compensatory articulation errors. In this chapter, a categorically stratified scale for classifying compensatory articulation errors according to severity and response to therapy is described. Finally, some strategies for speech intervention which are more suitable for a phonological and linguistic intervention are presented. The chapter explains how is that selecting the strategies to be used during the intervention according to the severity of the articulation errors seem to increase their effectiveness.

Chapter 34 - This chapter reviews major perspectives towards discourse analysis in foreign and/or second language learning and teaching settings. Three major strands that have been examined are Critical Discourse Analysis, Interactionist Discourse Analysis and Sociocultural Discourse Analysis. Each perspective is reviewed by providing the major characteristics of the perspectives and some sample studies. One or two most current studies that are published in major journals of the authors' field have been added to the reviews as well.

Chapter 35 - The main aim of this chapter is to help novice researchers gain some insights about conducting a discourse analysis research study. The authors mostly refer their previous experiences and discuss some issues that might facilitate the research process. The authors have divided this section into three sections. The first section, before data collection, discusses some issues to be done prior to the data collection process. During data collection mainly deals with how to record the data and obtain any other necessary information. The final section focuses on topics such as data transcription, data indexing, data reduction, coding and interrater reliability. Illustrations and samples are given whenever necessary. The chapter also includes a sample of Consent Form.

Chapter 36 - Discourse studies mainly try to go beyond sentence boundaries and analyze natural language in use. The context where written, spoken or any kind of semiotic event take place is a major concern in discourse analysis. Corpus linguistics is also related to the real language in use by making analyses of large collections of written or spoken language samples. Apart from corpus linguistics' being more of a methodology rather than a discipline per se, the main difference between the two is that while structural and lexical patterns are in the foreground in corpus linguistics, discourse analysis embraces the idea that there is more than meets the eye in the real language in use. In this chapter, possibilities of integrating corpus methodology into discourse studies are sought.

Chapter 37 - Research on the effects of feedback on EFL writing is well documented, although Hyland and Hyland state: 'Given how few studies have been carried out, little is known about the relationship between teacher and student discourse and teacher feedback in conferences and student revision'. The qualitative action research study outlined in this chapter addresses this imbalance. It concerns teacher-conferencing on academic essays written in a higher education context in Turkey. Based on a model of interrelated practices for action research suggested by Burns, it investigates the relationship between discourse features of the conference and alterations made in follow-up drafts. Working with a constructivist approach to data, the study outlines how three Turkish teachers analysed transcripts of themselves conferencing in order to identify desirable features. Using such features, a second AR team repeated this procedure to investigate the relationship between the conference and amendments to follow-up drafts. The chapter outlines practical action research and conferencing. It looks in particular at the effect of two specific features of conferencing discourse: teacher-eliciting and the use of the L1.

Chapter 38 - Blogs have become a useful component in many language classrooms, with the benefits of contributing to incidental learning among students and promoting collaboration among all members of the classroom community and across the increasingly globalizing world. The usefulness of blogs in writing courses has been explored, but their role in increasing reading proficiency and critical thinking in reading courses is less clearly understood. This chapter aims to analyze the discourse of blog postings for evidence of critical reading and active engagement in college-level ESL reading classrooms. Fifty-six students in five advanced-level Reading classes in an English for Academic Purposes (EAP) program at a mid-size, public undergraduate college in the United States are described in this chapter. Over the course of each semester, the students posted blog entries about three novels on a weekly basis. In addition, the students completed a pre- and post-course survey measuring their attitudes towards reading and blogging. Discourse analysis of the blog postings revealed that students' critical thinking on the readings deepened over the course of each semester. The results suggest that blogging may be usefully implemented to improve students' extensive reading outside of class and active engagement with the text and other readers. Further, the feedback provided by the students in both the survey and in the blog postings themselves points to ways in which blogs can create a strong sense of community in ESL reading courses and similar environments.

Chapter 39 - Research into the general nature of the supervisory process in language education has recently gained popularity. This chapter includes the examination of the analysis of the mitigation discourse found in the supervisory interaction between two graduate students. To illustrate the submerging patterns of mitigation the author will examine the nature of the supervisory feedback sessions the author provided for two classmates, one of

whom teaching ESL and the other Chinese at undergraduate level, focusing on the effects of such devices observed in the transcripts of the two post-observation conferences held with the latter. Findings of this study discussed in this chapter recommend that mitigation be used as a strong pedagogical tool for the professional development of practicing and student teachers.

Chapter 40 - Learner errors and how course instructors should react to these errors have been studied extensively by many different people up to now. The aim of this chapter is to compare and contrast the basic corrective feedback patterns used by native and non-native speaker teachers of English in two different ELT settings, a Turkish and an American EFL setting. Classroom conversations of one native (NS) and one non-native speaker (NNS) teacher of English from Turkish EFL setting and one NS and one NNS teacher of English from American ESL setting in reading-based courses were video-recorded for four weeks and they were transcribed by the researchers. The findings of this chapter indicate that NS teachers of English are more tolerant about learners' spoken errors than NNS teachers of English but they try to correct as many pronunciation and lexical errors as possible. On the other hand, NNS teachers of English do supply corrective feedback for lots of grammatical errors but they are not as sensitive as NS teachers of English about the pronunciation and lexical errors in both contexts.

Chapter 41 - While numerous studies have been conducted into the effects of corrective feedback (CF), learners are not often asked their opinions on why they incorporate or reject such feedback in their revised work. The classroom-based study discussed in this chapter builds on a previous study in which feedback types and error types were compared to uptake rates on a revised audio recording. Since feedback and error types seemed to show very limited correlation with uptake, further investigations were conducted to explore students' reasons for their responses to CF. Twenty one students were shown the original comments and data about their uptake and then interviewed briefly to examine their attitudes and approaches to the assignment. Results reveal a variety of possible reasons why students may be more or less inclined to make changes to a second recording based on their teacher's CF. An heuristic device to help teachers prevent problems with similar assignments and increase uptake rates is proposed.

Chapter 42 - Corrective feedback has been the focus of debates for the past two decades. Researchers have been dealing with questions of its place in second language writing, its effectiveness, and if it helps (or harms) at all. The results of this previous research have led to the creation of terms for the classification of feedback, such as "direct/indirect," "focused/comprehensive," and "coded/uncoded." The study discussed in this chapter, which took place in an EFL environment in an English Language Teaching department, investigates the relative effectiveness of coded versus uncoded feedback by comparing two drafts of an assignment. The results indicate that the coded feedback is slightly more effective, but this may be due to discrepancies in the frequency with which each type of feedback was given. While no solid conclusions can be drawn, the chapter implicates that for revision purposes, both coded and uncoded feedback are far more effective for improving accuracy than leaving students to their own devices.

Chapter 43 - It has been estimated that some 60% of today's world population is multilingual. Living in a multilingual world makes language learning essential and the foreign language teaching profession even more valued to guarantee communication in a wide spectrum of languages, thus promoting mobility around the world and ensuring the continuity of the translation industry. The emergence of a dizzying array of digital technology tools

together with the advent of web-enhanced language learning and CALL are useful to assist during the language learning process, however, the use of technology as a mere replacement of more traditional ways of instruction does not work. The incorporation of the omnipresent Web.2.0 and its mobile, distance, blended and flipped learning opportunities can provide students with a wide variety of authentic resources for the development of both communicative and structural skills inviting them to collaborate and to develop language awareness and learning competences in the process. From the teaching perspective, it is imperative to take some time to reflect on the suitability of educational tools and the implementation of new pedagogies such as constructivism that support the integration of educational technologies in the curriculum without overlooking the importance of maintaining its social and cross-cultural dimension, with a view to encourage autonomy, and increase exposure to the target language and culture. This chapter presents illustrations of the latest trends and practices in language learning, demonstrating that technology-enhanced language learning enables innovative foreign language delivery and empowers learners to acquire the chosen language in a more independent yet effective way.

Chapter 44 - The chapter describes the results of an experiment in building an online platform for learning foreign languages that allows people to teach their native language without being professional instructors. This platform allows audio and video connections between the participants and includes an interface with pre-defined interactive lessons. The content is presented in the form of bilateral scenario cards. Each of the participants (the student and the teacher) follows their own version of the cards in the video chat. For each card presented to the student there is a corresponding card for the teacher containing step-by-step instructions for reading the text out loud or asking the student a question and showing the correct answer. The student can use prompts and translations if s/he does not understand the teacher. The teacher does not have to prepare for the lessons, because the system contains all the necessary teaching materials. This system allows separating the lesson material from the teacher. Thus, the teacher can be any native speaker. The main constituents of content development are: dual language prompts, repetition, comprehension and a dictionary. Four levels are implemented: preschool, beginner, intermediate, and advanced. Four languages are currently supported: English, Spanish, German, and Russian.

In addition to the system description, gamification and viral mechanics are also discussed. Relationships between virality (viral involvement of users) and retention parameters as measurable metrics are calculated and discussed using real examples. Virality and monetization can be both competing and complementary mechanisms for the system growth. The F-growth factor, which combines both virality and retention, is proposed as the metrics of the overall freemium system performance in terms of the user base growth. This approach can be tested using a small number of users to assess the system potential performance. If the F-growth factor is less than one, the product needs further development. If the F-growth factor is greater than one, the system retains existing and attracts new users, thus a large scale market launch can be successful.

Chapter 45 - In the EFL context, the learners' extracurricular contact with the L2 is considered both an important goal and a substantial means to develop and optimize their foreign language acquisition. From a cognitive-motivational perspective the extent and intensity to communicate in a foreign language outside the EFL classroom will not only depend on the learners' language skills, but will also be strongly affected by their related self-beliefs. In particular, their perceptions of their own competencies as well as their

apprehension concerning the use of the English language should decisively regulate their actual willingness to communicate in the L2. Besides pertinent listening, pronunciation, vocabulary or grammar skills, in particular, the learners' oral narrative competencies and their related self-beliefs, respectively, should claim a central role in determining their L2 contact. However, as previous EFL research could incrementally differentiate L2 competence beliefs and anxieties into several specific subcomponents (such as speaking, reading, or writing beliefs) and could clearly demonstrate the relationships of these subcomponents with the foreign language learners' relevant achievement and proficiency levels – the issue of oral narrative competence beliefs and anxieties appears to be barely analyzed. Moreover, little is known about their contribution to explain interindividually existing differences in EFL learners' extracurricular L2 contact. Therefore, the present study aims at clarifying these relationships. In a sample of $N = 256$ German ninth-graders from 9 inner-city grammar schools the relations between their related competence beliefs, anxiety, teacher ratings of their relevant L2 skills, and their extracurricular L2 contact were analyzed. For concurrent validation, measures of their L1 and L2 self-concept were also included. Using structural equation modeling method the results could show the learners' L2 contact being directly explained by their self-perceptions of oral narrative competencies, which appeared to be directly affected by their anxiety concerning oral narrative situations. The anxiety variable, in turn, could be directly predicted by the teacher rating of learners' speaking skills. Hence, the L2 speaking skills had no direct impact on the learners' L2 contact, but were sequentially mediated by their oral narrative self-beliefs and their apprehension or fear of failure concerning oral narrative situations. Furthermore, multiple group comparison could demonstrate these relationships among variables to be invariant across gender. Taken altogether, the present findings stress the need for conceptually and methodologically more complex research designs to intensely unravel the developmental pathways and educational effects of EFL learners' extracurricular L2 activities.

Chapter 46 - The present study examines how a learner who learns Japanese as a foreign language (FL) at an Australian university develops a positive FL self-concept to overcome her anxiety about speaking the FL during the transition period from secondary school to university and then to a Japanese study abroad. FL self-concepts are a newly developed research area in applied linguistics, in which individual differences of the FL learners have been increasingly focussed on as well as affective factors, such as learners' feelings associated with the FL learning and socio-contextual factors, such as their learning environments. FL self-concepts refer to learners' beliefs about themselves as FL learners including an evaluation of their competence in FL and feelings of self-worth related to the evaluation. FL self-concepts are closely associated with anxiety to speak the FL because learners' social or intellectual status may be threatened by making mistakes, which may provoke negative FL self-concepts. This anxiety may worsen during the transition to universities or the initial stages of study abroad due to the unfamiliarity of new learning environments. Developing positive FL self-concepts and overcoming anxiety is very important, especially in those periods of time, for learners to increase their skills in communicating in FLs. FL or second language (SL) self-concepts have been investigated in the areas of English as FL, Russian study abroad, and European languages, such as Spanish or Italian. However, no studies have been carried out in Asian language learning contexts. Therefore, the present study researches a learner's self-concept of Japanese as a FL.

Data were collected longitudinally for two years with diary writing, classroom observation and interviews (face-to-face and by Skype). A case study approach was used to closely examine how a learner's self-concept changes with detailed, personal and contextualised data. This learner was focussed on because she participated in the study both during transitioning to university and during study abroad and data collected from her were very detailed and informative. The learner hesitated to speak Japanese in the classroom at the beginning of the course due to the fear of making mistakes, which did not contribute to developing a positive FL self-concept. By preparing for the lessons more carefully according to her belief in the importance of practice, she became more confident and started speaking Japanese more often in class. Even after developing a positive FL self-concept in the classroom, she hesitated to speak Japanese outside of class in her study abroad. After developing her confidence in listening comprehension with frequent practice and having a critical experience, her FL self-concept in speaking became more positive. The present study found that the development of learners' FL self-concepts is not linear. Even after developing positive FL self-concepts in a particular learning environment, their self-concepts may become negative in a different learning context. The study also suggests that learners can develop positive FL self-concepts by making learning actions based on their beliefs about FL learning.

Chapter 47 - Teaching and learning is believed to be context bound, as what works in one context may be unsuitable in another context. Appropriate ELT methodologies are chosen in line with a variety of existing variables, including 'the constraints of the school or educational setting'. Unfortunately, innovations in approaches and methodologies have mostly been a reaction to learners' proficiency and the demand for specified competences by the public. This has prompted a series of ELT reforms from the sixteenth century England to the present. On the whole, reforms in the domain have been addressing vertical concerns as a result of the conservative understanding of the Englishness of ELT contexts. However, in recent times, English has spread beyond the borders of conservatism, thereby pushing the concerns of a homogeneous ELT landscape to more flexible and dynamic spectra of teaching and language use. In spite of this flexibility, the periphery still believes in the methodologies conceived at the Centre for the Centre. Due to the inapplicability of the methodologies in all contexts, a dividing line seems to exist between 'standard' contexts and 'under-resourced context'. This Chapter argues that the 'under-resourcefulness' of an ELT context is misguided, as it is derived from the conception of what is believed to be 'standard' and not on the concept of adequacy and sufficiency. Secondly, the Chapter hopes to demonstrate that the 'under-resourced' conception of contexts is the result of the inapplicability of Centre-driven methodologies in contexts that are only different and not actually under-resourced per se. The centrality of these under-resourced contexts in innovating ELT methodologies is posited.

Chapter 48 - Having considered the data of previous studies related to certain benefits of CLIL on students' linguistic and cognitive development, a project was piloted with 6th grade students (aged 11-12 years) of an experimental primary school in Northern Greece. The project, *From Michelangelo to Picasso*, aimed at introducing some aspects of cultural history in an alternative way and creating an educational environment that favors the art experimentation and expression in EFL (English as a Foreign Language). The project comprised 10 thematic axes that included all the important artistic movements from 15th to 21st century: "Renaissance", "Baroque, Rococo", "Neoclassicism, Romanticism", "Realism", "Impressionism", "Post-impressionism", "Expressionism, Fauvism", "Cubism, Abstract Art",

“Surrealism”, “Contemporary art (Abstract Expressionism, Pop Art, Performance, Installation, etc.)”. The project was carried out in three stages: a. The ‘Pre-task’ stage, where the students were introduced to the historic, artistic and ideological framework and the key-artists of each artistic movement. b. The ‘Task-Cycle’ stage, where the students were engaged into various group tasks involving experiential learning, problem solving and creative expression. In such an activity-based context students were exploring, communicating, and elaborating content knowledge in the target language. c. The ‘Language Focus’ stage was carried out in a game-based context. Activities such as role play games, pantomime, creative workshops, exhibitions, artistic presentations, quiz and puzzle games, debates, empathy were at the core of every thematic unit. In order to estimate the effectiveness of the project, *multi-method* approaches were employed such as, content-specific and FL pre/posttests, role playing, journals, portfolio and questionnaires. The data suggested that the CLIL module contributed to improving specific vocabulary and enhancing students’ communication skills. Concerning the subject matter, they expanded their knowledge on history of art approaching experientially and creatively the artistic, historical and ideological framework of the development of art in the western world.

Chapter 49 - Lexical inferencing strategies are important cognitive strategy not only for obtaining good level of reading comprehension but also an effective learning strategy in vocabulary acquisition. Closely related to lexical inferencing strategies is incidental vocabulary acquisition, the latter is seen as an essential prerequisite for the latter, and the latter is viewed as one of the products of lexical inferencing strategies. This chapter systematically and critically reviews a variety of factors which influence lexical inferencing strategy use and incidental vocabulary acquisition among foreign language (FL) learners. The chapter concludes with some directions for researchers to consider in the future research.

Chapter 50 - The New Literacy Studies encompass a notion of language as a social practice and the understanding that it is necessary to foster the development of critical thinking in citizens/students, aiming at citizenship education and social change. This chapter aims to introduce the theories of New Literacies and Critical Literacy and their relevance to research in the field of Teaching English as a Foreign Language (TEFL) and Teacher Education. The chapter presents and discusses a group of recent theories that serve as the theoretical basis for a possible epistemological change in Teaching English as a Foreign Language, especially in public schools. The chapter starts by presenting Literacy Studies and how the concept of Literacy has changed lately and goes on to discuss the New Literacies Studies and Multiliteracies. The well-known autonomous and ideological models of literacy are also presented and discussed in the chapter. Throughout the chapter, some examples to the fields of English as a Foreign Language (EFL) and Language Teacher Education are also presented and implications to research and practice in these areas are discussed. The chapter takes the perspective of EFL teaching in Brazil, where the research was conducted.

Chapter 51 - This chapter provides an update on a decade of neuroimaging studies (using electroencephalography, EEG, and magnetoencephalography, MEG) that have focused on linguistic processing in patients with aphasia. The goal of this chapter is to shed light on the challenges and usefulness in using such techniques for the study of aphasia. The authors review study objectives, techniques and results, and highlight the linguistic structures that have been studied. The first part defines the challenges and usefulness of EEG and MEG techniques for aphasiology; the second reports the procedures, targets and main results of

reviewed studies; the last section addresses the following issues: What does neuroimaging add to classical behavioral studies on aphasia? Are they both necessary and why?

Chapter 52 - Recent advances in neuroimaging have allowed for insight into the millisecond-by-millisecond unfolding of language processing in the brain. In particular, event-related brain potentials (ERPs), non-invasive measures of scalp-based EEG (electroencephalographic) recordings of underlying brain activity, can reflect on-line neurocognitive processes involved in linguistic processing. In this chapter the authors will present a review of ERP research focusing on lexical-semantic, morphosyntactic and syntactic processing during language comprehension in children with and without specific language impairment (SLI). The authors will highlight results important for our understanding of SLI, as well as methodological issues and challenges involved in ERP research.

Chapter 53 - Concerned about traditional practice with respect to challenging behaviors of learners with learning difficulties and disabilities (LLDD) in the UK, the author questioned the extent to which they could manage themselves. From 265 LLDD, the author invited 15 male learners, median age of 19, to participate in 12 weekly 1 hour discussions in sense-making groups specific to the challenging behavior of 3 case study LLDD who were drawn from the 15, as well as in 12 weekly 1 hour interviews that addressed behaviors recorded by practitioners (someone who works within a particular paradigm of care and education) as challenging. Thematic analysis yielded 5 themes related to different versions of LLDD either acting responsibly (handing their problems over to practitioners) or irresponsibly (deliberately disrupting learning and social environments), categorized as *I've got a problem, I told staff, I can't, I'm disabled* and *I'm not normal*. Discursive analysis highlighted 5 variable communicative and behavior patterns, *Conditioned-Response, Role Specific, Inner-Conflicted, Retreating* and *Higher Order*, which correlated with LLDD levels of differentiation from various adverse sources of influence on their identities. Despite these influences, when invited to engage non-defensively, LLDD proved able to manage themselves.

Chapter 54 - Mental speed is defined as the speed at which neural processes are completed and it has been found that individual performance on speed measures significantly correlates with fluid intelligence scores. Given that tradition measures of mental speed use a discrimination judgment, the goal of this research was to expand upon the design of inspection time tasks, in which the exposure time for sensory stimuli is manipulated. In this study, mental speed was assessed using several novel inspection time measures that involved speeded letter detection and identification, along with letter-pair comparisons. The letter detection time task was considered to be the most basic measure of time needed to accurately perceive the presence of the stimulus, whereas letter identification requires the addition of verbal processes to label the stimulus. For each measure the time for the presentation duration of the target stimuli was varied from 80 to 16 milliseconds. In addition to the 3 inspection time tests, both fluid intelligence and working memory capacity were assessed. Fluid intelligence was assessed using a standardized visual reasoning test (Ravens), while working memory capacity was observed using a computerized complex span measure (Counting Span). Performance data for the inspection time tasks indicate that detection task was significantly easier, even under extreme time constraints for stimulus processing (16ms) in comparison to the letter identification and discrimination versions, in which accuracy dropped more drastically with decreasing inspection time. Correlational data revealed that all 3 speed measures predicted intelligence, however, only identification was related to working memory.

Both mental speed and working memory capacity are significantly correlated with fluid intelligence, but each process makes a unique contribution to intelligence.

Chapter 55 - Compounding is an effective way to express new meanings by combining existing concepts. However, the resultant meaning involves not only the sum of meanings of the two constituent concepts but also the semantic relation between them. Compounding is particularly important for the study of Chinese word recognition as compound word is the dominant type of vocabulary in Chinese. The present commentary describes two recent studies using event-related potentials (ERPs) to examine the time course of lexical processing for Chinese compound words. In the first study, the authors reported the discovery of a novel ERP component, named the centro-parietal N200, which was elicited about 200ms after the onset of two-character words. Evidence suggests that this N200 reflects recognition of the two characters' orthographic form. In the second study, the authors used a relation priming paradigm and showed that the relation combining meanings of the two characters was activated in the N400 time window about 80ms later than the meaning activation of the individual characters. Together, the results indicate a clear serial process in reading compound Chinese words, first recognizing the word form around 200ms following word presentation, and then starting to retrieve each character's meaning at around 260ms, and finally integrating the two constituting meanings at around 340ms.

Chapter 56 - In language teaching and learning, major roles belong to teachers and learners. Active involvement of these two parties necessitates profound background knowledge of factors which affects the process of learning and teaching language. Deriving from this knowledge, the teacher develops his skill in teaching; the learner learns how to become more successful in achieving his goal, i.e., to learn another language. This chapter will present the basic factors about learners and the basic characteristics of teachers.

Chapter 57 - Planning is a necessary step no matter what business you are involved in if you want to achieve your goals. If we consider teachers as "the managers" of the student learning, s/he also needs to know exactly what s/he intends to do in the class. There are four main things that a teacher needs to know before going to the class to teach: the aim of the lesson; what new language the lesson contains; the main stages of the lesson (when and how to organize different activities); what to do at each stage.

A lesson plan is a very useful tool which can be seen as a combination of guide, resource, and historical document reflecting our teaching philosophy, student population, textbooks and most importantly, our goals for our students. Jensen also suggests that "a lesson plan is essential for novice teachers and convenient for experienced teachers".

Chapter 58 - Most of the undergraduate and graduate level English Language Teaching programs offer courses in Linguistics, Language Acquisition, Approaches and Methods, Methodology and Teaching Language Skills as well as Practicum and School Practice. All of these courses provide the necessary skills and knowledge to help student teachers become skillful and adept practitioners. Usually, Practicum and School Practice courses are offered late in the program. Until the Practicum and School Experience courses, many of the foundational courses in ELT programs do not focus on the practical aspect of teacher preparation. Microteaching, as a technique for teacher education, can address some of these problems and help the student learn the process of becoming practitioners while they are taking some basic foundational courses. It is also commonly used as a component of in-service teacher development programs for various types and stages of professional development. This training procedure focuses on the simplification of the complexities of the

regular teaching-learning process by minimizing any of these aspects: class-size, time, task and content. It also adds the immediate and delayed feedback opportunity from various resources.

Chapter 59 - What language skill comes into your mind first when you are asked to define the term fluency in a foreign language? "...people who know a language are referred to as 'speakers' of that language, as if speaking included all other kinds of knowing". Speaking seems to be intuitively regarded as the most important skill of all the four language skills. In fact, many language learners consider speaking as equal to the overall language competence, and they measure their language proficiency, their accomplishments and their progress through learning based on their speaking skills. Fluency is then strongly associated with and measured by the ability to converse with others, much more than the ability to read, comprehend oral language or express oneself on a written document. In many contexts, people judge a language user 'at face value' upon speaking skill. In other words, people form judgments about our language competence from our speaking skills rather than any other skill.

Speaking can be defined as "the process of building and sharing meaning through the use of verbal and non-verbal symbols, in a variety of contexts". Speaking plays a crucial role in foreign language learning and teaching. With the internalization of English as the medium of communication, the need for meaningful and successful interactions has become more imperative than ever. Students should not only form grammatically correct sentences, but also use these sentences in appropriate social contexts taking into account the cultural background and social status of the interlocutor (the person(s) they are talking to).

Chapter 60 - Listening is one of the basic skills because it is essential for communication. For Doff, if we want to improve speaking skills, or conversational skills, we need to develop listening skills; students need to understand what they hear. This can be achieved through listening to enough English at normal speed. Unless we are teaching English at a country where it is spoken, we need to give students plenty of opportunities to listen to English in the classroom.

Some people believe that listening is neglected in language teaching since it is seen as a normal reflex. "In reality, listening is used far more than any other single language skill in normal daily life. On average, we can expect to listen twice as much as we speak, four times more than we read, and five times more than we write. There are other studies which show the importance of listening. One of them was conducted by Wilt and it goes back to 1950s.

In this study it was found that 45% of communication was listening, 30% speaking, 16% reading and 9% writing. In another older one, Rankin found that 70% of waking time was spent communicating. In short, all these studies highlight the importance of listening and communication in English language learning. It is believed that when learners listen to authentic English video and audio materials for a long time, they can produce better sentences more quickly than learners who do not do so. This is very important for learners who are learning English in non-English-speaking countries. To illustrate, when students listen to dialogues, discussions, debates, interviews, etc., they can practice the content of various topics and vocabulary by hearing the way people speak in real life. Another useful practice can be discussing issues after listening to texts or programs in English.

To sum up, through listening, learners can modify the things they hear, and by imitating, they can learn certain structures, vocabulary items, pronunciation, and speaking skills can

develop. Psychologically they will feel better and more comfortable when listening than when speaking, because they do not produce anything but just receive input.

Chapter 61 - This chapter examines the segmental and supra-segmental problems in a short excerpt from video recordings of accented speech and argues that it does not necessarily cause intelligibility problems and can be used as a model for ESL learners with the same L1. The informants used in this study are, Galip Abacı and Aylin Dolu, pseudonyms for two senior students at the English Language Teaching Program at Kocaeli University, Faculty of Education. The two informants were videotaped during thirty minute interviews at the faculty of Education while answering questions about their opinions about Turkey's foreign policy. My reason for studying accented but intelligible speech samples is that the author find it interesting not only because it is a reality but also a very viable option for the majority of EFL/ESL speakers worldwide who are not likely to attain native-like L2 speech no matter how hard they try. As Murphy suggests "accented speakers may serve as more realistic models of L2 pronunciation achievement and, in many cases, of societal accomplishment as well." Furthermore, "the speaking proficiency of an AIC (accented, intelligible, and comprehensible) speaker of English represents a sufficient and attainable level to which pronunciation teachers can feel confident in encouraging learners to aspire". The idea of intelligibility has become central to the teaching of pronunciation... the idea was slow to feed through to practice, but in the 1970s many English teachers worldwide came to realize that it was unrealistic, time-consuming and potentially inhibitory to aim for a native like accent (Field, 2005:400). This led to the abandonment of traditional checklist approaches to pronunciation instruction and intelligibility was adopted as a criterion. As a Turkish L1 speaker myself, the author think that there is great potential in focusing on speakers like the two senior ELT majors at a Turkish university in that they are very likely to be perceived as intelligible hence successful EFL speakers by a possible target audience of this work, my first year undergraduate students at the EFL Education program of Kocaeli University in Turkey.

Chapter 62 - The shift from form-focused foreign language instruction paradigm to a lexically oriented one has been voiced for more than a couple of decades. Although lexical competence was already defined as one of the most crucial indicators of general language ability decades ago, some other researchers, after a couple of decades, stated that L2 lexicon is in a rediscovery period. This means that the importance of lexicon in a foreign language has always been accepted but has only been gaining attention recently. As is always the case, when a topic is considered to be worth learning, the well-known questions what to teach about the topic and how to teach it arise.

Chapter 63 - One day an English teacher goes into the English class, and hears some students talking about writing in English. "Do you like writing?" asks one of them to the others silently. Most reply anxiously and simultaneously "Nooo!!" The answer is unfortunately but not surprisingly a big "No" and the teacher feels a bit desperate. "It is difficult," one says. The other adds "I simply can't write." "It takes time," another says. One murmurs "It's boring. I hope this new teacher knows what to do." Hopefully, the new teacher knows how to overcome these problems in an EFL/ESL class.

What makes writing in English somewhat difficult for learners is a matter question for teachers of English for ages. Writing is productive skill and requires thinking many aspects of language such as sentence structure, grammar, spelling, vocabulary, punctuation, layout besides the content, organization, feedback and the grade they will get. Furthermore, if time is limited while writing, then the murmurs start in the EFL/ESL class. How did you feel as

learners when you were assigned to hand in a written work in your English class as a young learner?

On the other hand, do teachers like teaching writing? Most teachers will probably answer this question hesitantly as they think about the workload after students have written any kind of text, then start asking “Why should we teach writing? What writing activities should we do in class? Will we correct every mistake? How will we correct and assess them? How will we give feedback to each student?” The answers of all these questions have to be clear for both English teachers and EFL/ESL students. Therefore, when the right decisions are given, the right steps are followed in teaching writing to students in an EFL/ESL class, students become more motivated and encouraged to write in English and teachers are more willing to do writing tasks.

Chapter 64 - Language is an important means of communication. People learn how to convey and share the meanings of things through language. The relationship between second/foreign language acquisition and communication can be best explained by Halliday’s language-based theory of learning principal. According to Halliday all learning is a linguistic process and consists of three interwoven language functions: learning language, learning content through language, and learning about language.

As a complicated system language includes “small elements that can be combined in an infinite number of ways in order to make larger structures”. The four dynamics of language are phonology, morphology, syntax, and semantics. The phonology is the sound system of a language and a set of rules that control how they can be combined. In other words, it is the audible quality of language. Morphology is the forms of words, and the ways these forms of words are related to other words. Syntax is the rules for the formation of sentences and phrases in which words can be combined. Finally, the semantics is the study of meaning in language. It includes the meanings that emerge from all of the previous three elements: the sounds, word meanings, and word-order patterns. Phonology, morphology, syntax, and semantics exist in all languages. However, a writing system, or orthography may not exist in every language. The other four universals of language (phonology, morphology, syntax and semantics) are naturally acquired by native speakers of a language. On the other hand, orthography is not naturally acquired and needs to be taught since it is related to literacy. Pinker supports this claim by stating that, “Language is an instinct, but reading is not”.

In language learning there are four skills that learners need for complete communication: listening, speaking, reading, and writing. In the first or native language, people have all these skills and background knowledge that is needed to communicate. So, they are probably not aware of the complexity of the process. However, in second/foreign language acquisition the four skills represent a particular pattern. Though they are stated in the same order with first language, generally listening and reading are characterized as “receptive,” and speaking and writing as “productive”. However, we should be cautious in drawing precise lines between them “because they fail to capture the active meaning making that takes place during both listening and reading”. The four skills need to be included in the Foreign Language (FL)/ Second Language (SL) curricula both for instructional planning and assessment. Thus, this chapter particularly focuses on reading skill in foreign language learning.

Chapter 65 - In the language classroom, one of the most important parts of being a teacher is presenting new language, supplying some opportunities to practice it and make revisions when necessary. Whether to teach grammar or not has always been a controversial issue among researchers and practitioners of language teaching. Even though it is

acknowledged that people learn languages differently, the process of learning becomes easier if they are able to perceive regularities and patterns. However, we are all familiar with students who are really good at identifying grammatical structures and who can list the basic usage related to each of them but who cannot use them in real communication. As suggested by Larsen-Freeman (2001), grammatical knowledge is important as long as it enables learners to communicate “correctly, meaningfully and appropriately”. In order to emphasize the inadequacy of form-based teaching and going beyond form, she suggested her three-dimensional framework including “form”, “meaning” and “use”. Larsen-Freeman (2001) pointed out that if students are not aware of the fact that grammatical structure has these 3 dimensions, they are prone to making mistakes even if they know the rules of the target language. In order to explain the connection between these dimensions, Savage et al. (2010) give the following example:

Form: MUST + the base form of the verb (infinitive without to)

Meaning: obligation or necessity

Use: formal, used much more in writing than in speaking. In speaking, people tend to use “have to”.

According to Freeman’s this three-dimensional framework, when students are aware of all these three dimensions of modal verb “MUST” in English, they will be able to use it correctly, meaningfully and in appropriate situations.

Chapter 66 - Realistically, how often do you talk without listening? Or write without reading? For just about most situations we can imagine from our daily lives, several language skills are used simultaneously for communicative purposes. In the past several decades, much evidence has emerged that, in order for learners to attain competence in a language, teaching needs to integrate both linguistic and communicative skills.

Chapter 67 - Using literature to teach language skills has been a matter of discussion since the 1960s. However, the use of literary works to teach languages dates back to a much earlier period. During the 19th century the primary means of language teaching was the grammar translation method. The practitioners of this method would view and exploit literary texts as rich sources of translation. During this period works of literature were regarded as efficient pedagogical materials. Through the translation of literary texts in their mother tongue, the students were made to practise such language skills as grammar and vocabulary. However, the onset of direct and audio-lingual methods during 1960s and 1970s brought about a radical change of opinion as to the use of literature as a language teaching tool. These methods that seemed to rise upon structural approaches put heavy emphasis on form thereby dismissing the role of literature in teaching a foreign language. From this point onwards purely linguistic concerns overshadowed the use of literary works for language teaching purposes. Even the emergence of CLT in the late 1970s and early 1980s could not prevent the exclusion of literature from the language teaching curricula. According to Maley, one of the main reasons of this trend against the utilization of literature as a pedagogical tool was the lack of empirical research that would manifest the potential of literature as a beneficial language teaching source. Following a long period of silence, the use of literature in the language classroom experienced a revival starting from the middle of the 1980s. Under the influence of communicative trend, literature started to be regarded as a tool to assist the development of mainly communicative competence as well as “a springboard for the development of critical thinking and aesthetic appreciation” which also contributes to the students’ awareness on the culture and society of the relevant country. Recognizing their

potential, many linguists began to view literary works in the classroom as authentic, pleasurable and cultural material. Since this reemergence of literature in the realm of language teaching, not only the use of literary works but also research, both empirical and theoretical, as to their role in language teaching has gradually gained momentum. Today, particularly the popularity of interdisciplinary studies has brought about an even greater focus on the pedagogical potential of literature particularly for language teaching purposes. Despite the difficulties of incorporating literary works in ELT curriculum, works of many scholars in the field strongly argue for the benefits that inclusion of literature would potentially bring. Many studies conducted by Lazar, Cook, and Shanahan draw attention to the potential that literature holds as a language teaching tool.

Despite the concerns stated by a few linguists and educators, there has been a great deal of research that speaks in favor of literature as a pedagogical tool. Bradford introduces three ways through which works of literature are likely to be conducive to success in language teaching. First of all, literature provides a rich source of vocabulary for the language learner. The second contribution of literature according to Bradford is the exceptional sentence structures that it hosts. Getting familiar with these structures in authentic settings is an advantage for language learners. Povey holds a similar view asserting that with its rich vocabulary pool and complex syntactical patterns literature helps language learners develop the extent of their proficiency levels both in terms of language use and linguistic competence. Finally, literary works introduce new cultural perspectives and give the chance to have a language experience in real life settings. As McKay states literature can be used to enhance awareness of students as to the diverse uses of language. Another important contribution of literature to language learning is regarded as its effect on critical thinking skills of students. Oster suggests that literature provides students different perspectives, which in turn extends students' vision and encourages critical thinking. Lazar draws attention to a similar potential by pointing out that literature might become a language teaching tool by fostering discussion, controversy and critical thinking. Another important benefit of literature is that through exposure to language intended for native speakers, students have the chance to learn different forms and conventions. In this respect, literary works become real and meaningful models for language learners. One of the most detailed accounts trying to justify the role of literature in language teaching comes from Maley, who lays out a number of reasons to use literary works in EFL/ESL settings: 1. Universality: All cultures and languages follow a certain literary tradition, which involve common themes such as nature, death, love and separation. 2. Non-triviality: Literary texts present real and meaningful materials unlike the artificial trivialized language teaching resources. 3. Personal relevance: the events, views and emotions embedded in literature are relevant to learners' own experiences, so they can find or imagine correlations to their personal lives in works of literature. 4. Variety: Literary texts appear in a multitude of different forms and contents. This makes them enjoyable and motivating for language learners. 5. Interest: Literature deals with familiar subjects in an interesting and appealing manner. 6. Economy and suggestive power: Through literary devices, literature has the power to say much with a minimum amount of expression. 7. Ambiguity: The perceived meaning in literary texts can vary from individual to individual, which makes it an invaluable source for discussion and interaction.

In today's text books students have little opportunity to be involved in authentic use of language. The settings and activities provided by these materials are mostly artificial and remote from real communication. Literature requires students to actively participate in

meaningful activities and eliminates the disadvantages of mechanical process which is unfortunately still predominant in EFL/ESL classrooms worldwide. Duff and Maley bases the need for the incorporation of literature into language teaching curriculum upon its “linguistic, methodological and motivational” potential. Unlike the referential features of traditional text books and materials, literary texts are representational, which helps learners to use and develop their cognitive skills.

Chapter 68 - Although Task-Based language learning (TBLL), also known as task-based language teaching (TBLT) or task-based instruction (TBI), is quiet a popular term in ELT field, this methodology do not seem to have a fixed definition. However, it can be defined in general terms as Foster suggests:

TBLL methodologies share a common idea: giving learners tasks to transact, rather than items to learn, provides an environment which best promotes the natural language learning process.

This method has become a corner-stone of many educational institutions and ministries of education around the world. This might result from the fact that it gives an emphasis on “means” rather than “product”. It has gained popularity as it also encourages learners to be reflective learners, and welcomes a wide range of learning styles. Learning with an explicit sense of purpose is key to student motivation and involvement and, thus it is consistent with current theories of education. Another reason for TBLL to be a keystone approach might be the fact that learning occurs most effectively when related to the real-life activities performed by the learner. Focusing on the use of authentic language and asking learners to do meaningful tasks such as visiting a doctor, calling customer service for help or conducting an interview, while using L2, this method enables students to investigate the language in a non-threatening environment and teachers to achieve initiating reflective learning and teaching.

Chapter 69 - Cognitive linguistics emerged as a movement in the mid-1980s. Although in some sense it represents a new direction for linguistics, cognitive linguistics also builds upon venerable traditions, re-connecting the discipline with its past rather than severing ties and striking off in a revolutionary direction. Originally inspired by work by psychologists on the structure of human categorization in the 1970s, cognitive linguistics has maintained its commitment to psychological and neurological plausibility. Cognitive linguistics views linguistic cognition as indistinguishable from general cognition and thus seeks explanation of linguistic phenomena in terms of general cognitive strategies, such as metaphor, metonymy, and blending. Grammar and lexicon are viewed as parts of a single continuum and thus expected to be subject to the same cognitive strategies. Significant developments within cognitive linguistics in the past two decades include construction grammar and the application of quantitative methods to analyses.

Chapter 70 - Cognitive grammar belongs to the broader traditions of cognitive linguistics and functional linguistics. It emphasizes the symbolic function of language and the crucial role of conceptualization in social interaction. It is based on a conceptualist semantics recognizing the central importance of construal, i.e., our ability to conceive and portray the same situation in alternate ways.

A properly formulated conceptualist semantics makes possible a symbolic account of grammar. It is claimed that lexicon and grammar form a continuum fully describable as assemblies of symbolic structures (form-meaning pairings). Grammar is therefore meaningful, and valid grammatical notions have conceptual import. By way of example, a variety of evidence is cited to support semantic characterizations of subject and object.

Chapter 71 - This chapter provides a comprehensive and critical review of the major theories and models of conceptual combination, by highlighting agreements and controversies in the literature, and identifying future directions for research. The review summarizes the basic arguments of ten major models and then presents an analytical framework to compare and contrast these models along four dimensions: (1) the causal role of schemata in the model, (2) the role of cognitive harmony or consistency in the model, (3) the pragmatic orientation in the model, and (4) the explanatory scope of the model. The review identifies areas of agreement and disagreement among the various models and theories and calls for a synthesis theory to address various theoretical weaknesses and empirical gaps in the current explanations.

Chapter 72 - In part based on Nie and Chen, this chapter studies the complicated semantic networks of WATER. It demonstrates that the concept of WATER has found its way into all major components of the Chinese language: its writing system, its morphology, its semantics, and its syntax. The result is a multidimensional network of networks. The forming of these networks—and the eventual super-network—is due not only to conceptual metaphors/metonymies but also to other factors such as perceptual considerations and social values. In addition, since meaning is found to exist at the level below the written word, in the radical, the paper raises some important issues regarding the linguistic status of radicals in the language.

Chapter 73 - The progressive construction has a tripartite symbolic structure in which the auxiliary verb symbolically links up with the meaning component of TENSE, the main verb with the expressed SITUATION, and the present participial realization of the main verb with the aspectual category of IMPERFECTIVITY. The present paper focuses on each of these symbolic links and their interplay, and investigates the meaning construction processes involved in the symbolic structure of the progressive construction. Drawing on Croft and Wood's [2000] model of construal operations—revised in Croft and Cruse [2004: 40–73]—the present paper provides an overview of construal operations that are likely to be at play in the construction of the aspectual and actional meaning components of the progressive construction. The discussion also involves instances of the progressive construction, which display low semantic compatibility, as the ensuing semantic coercion involves a number of construal operations that are revelatory to the meaning construction of the progressive in general.

Chapter 74 - This chapter explores two fundamental tenets of Cognitive Grammar (CG) with reference to the meaning of the English pronoun *it*. One tenet is that all linguistic elements posited in language have conceptual (semantic) import. On the basis of this tenet, the author argues that the pronoun *it* is meaningful and its multiple senses can be characterised in terms of a prototype: a central sense from which other senses are somehow derived. The other tenet is that the meaning of a construction, as reflected in its particular morphosyntactic organisation, evokes a particular construal (imagery) imposed on its content. On the basis of this tenet, the author argues that a construction containing the pronoun *it* is motivated by the construal of scope: the array of conceptual content, narrow or broad, which the speaker chooses to characterize an expression. In a narrow scope which is represented by a non-extraposed construction, the speaker considers a minimal range of content in describing the situation. In a broad scope which is represented by an extraposed construction, the speaker considers a maximal range of content in describing the situation. The speaker's ability to construe a situation in a variety of ways is considered a key concept in CG.

Chapter 75 - The present chapter analyses Portuguese concessive constructions introduced by *apesar de* ('in weight of') and *embora* (from Old Portuguese *em boa hora*, 'in good time'). From the standpoint of Cognitive Grammar, it is argued that the constructions display a prime example of iconicity. Thus, it is shown that iconic principles such as linear ordering, formal complexity and formal distance explain the reason why the *apesar de* construction prototypically designates a more direct concessive relation, while the *embora* construction designates a more complex relation to the main clause. Further, it is claimed that the complex relation between the *embora* construction and the main clause represents a prime example of subjectification. Finally, the analysis shows that the subjunctive mood in the *embora* construction is related to the notion of dominion.

Chapter 76 - This chapter, firmly anchored in the framework of Leonard Talmy's cognitive semantics, reconstructs a core semantics of the English verb *seem*, which is considered a central instantiation of the schematic system of cognitive state. This 'new' semantics is meant to overcome the indecisiveness of recent accounts how to categorize *seem* (and its equivalents in other European languages): either as evidential or as epistemic or as both, and concomitantly identifying the meaning of *seem* with the meaning of the various constructions of which it is a constituent. To this end, the semantics of *seem* is here associated with Talmy's concept of the comparison frame, which places alternative conceptualizations of a situation within a single frame. In the case of *seem*, these alternatives are either 'fictive' or 'factive', juxtaposed in an ambiguous figure-ground configuration, which may be disambiguated by what in Talmy's ongoing research on the attention system in language is called non-dedicated lexical triggers (like *really*, *just*, *merely*, *only*). Conceived of as an incentive for further investigations of how schematic systems are 'recruited' to integrate, the paper at the same time testifies to the explanatory power of Talmy's Overlapping Systems Model of Cognitive Organization.

Chapter 77 - Within Talmy's and Slobin's typological framework, German belongs to satellite-framed languages, which generally express the path of motion in satellites and the manner of motion in the main verb. For Talmy, the expression of the path is the most basic information, it constitutes the core component; the manner expression is a subsidiary dimension. Many studies have focussed on the typological differences between different languages based on the path expression and have paid less attention to the expression of the manner dimension. Our study aims at taking a closer look at this neglected dimension of the manner of motion as it is realized in German. It will show that German is characterized by a manner salience which is realized at different levels of lexicalization and which is not restricted to motion and location verbs as the core of the lexicalization pattern. The manner of motion is typically also expressed in complex prepositional groups, especially with the preposition *bis* ('up to/till/until'), or at the level of complex local adverbs or postpositions which are hardly translatable into other languages. Constructions with complex particle verbs which combine a particle expressing a path of motion with a simplex verb that expresses a manner (but not a motion), constructions with a non-motion manner verb accompanied by a path satellite, or syntactic structures that combine a modal verb with a path satellite are typical for the German language as they combine in one structure expressions of path and manner of motion. The study presents the theoretical aspects of these different categories highlighting the «German way of thinking and speaking». It further illustrates the difficulties encountered when trying to translate the above examples into the verb-framed language French, which often omits the expression of manner.

Chapter 78 - For both literal and metaphorical motion, languages like English tend to express path in the satellite following the main verb of the sentence, freeing the verb to convey manner of motion information. In contrast, languages like Spanish tend to express path of motion in the main verb and less often directly convey manner of motion. Interestingly, theories about metaphor processing differ in the emphasis they give to cross-linguistic differences. In two studies, the current investigation examined 60 (30 English-speaking, 30 Spanish-speaking) adult participants' judgments about and reaction times for literal and metaphorical motion in familiar phrases (Experiment 1) as well as novel motion event metaphors (Experiment 2). Results suggest that English speakers both more frequently identified familiar metaphorical sentences when they included a manner verb and were faster at making these judgments than were Spanish speakers. With novel metaphors, English speakers picked the literal match at a proportionally greater rate than did Spanish speakers and did so more slowly than did Spanish speakers when sentences contained a path verb. These results indicate that English and Spanish speakers approach the task of interpreting metaphors in different ways depending on the type of verb that is used in the sentence.

Chapter 79 - This chapter compares and contrasts the metaphoric/metonymic conceptualisations of ANGER in English and Akan, a West African, Kwa, language within the general framework of conceptual metaphor theory (CMT). Studies on cross-cultural conceptual metaphors/metonymies in the cognitive linguistic tradition, particularly, those that concern emotion concepts, reveal both similarities and variation. The cultural embodied prototype theory explains this phenomenon by positing the cultural embodiment hypothesis. The paper particularly focuses on the language-specific construals or elaborations of shared conceptual metaphors of ANGER in the two languages to argue in support of the cultural embodiment hypothesis, namely that embodied cognition (as is reflected in the metaphorical/metonymic conceptualisations of emotions) is based on both universal human experience and culture-specific experience. The linguistic evidence in this chapter suggests that universal human embodied cognition works only at the generic/highly schematic level of conceptualisation. However, they are given language-specific elaborations or construals that are grounded in cultural salience (cultural embodiment). Using both primary and secondary data, this chapter contributes to the universality versus language-specificity of emotion conceptualisation debate by bringing evidence from a less known language/culture.

Chapter 80 - This chapter's focus are verbal sequences which, in the written modality of alphabetical orthographic systems, are marked off from their linguistic environment by a conventionalized set of figural elements out of a non-alphanumeric representational system (typically, parentheses, dashes, or commas). As these parenthetical constructions are (even traditionally) associated with some notion of attention, Talmy's (forthcoming) factor model of linguistic attention, informed by a sophisticated theory of language-specific attentional parameters, offers a coherent theoretical and powerful analytical framework that is both sufficiently independent and general to allow for a systematic and encompassive investigation of these constructions' attentional specifics. Proceeding from Talmy's analysis of parenthetical delivery in the spoken modality, some initial suggestions will be submitted of how to adapt his insights into attention and parentheticality to the particular conditions and specific demands of the written language: Two fundamental attentional mechanisms from a category of causal factors affecting linguistic entities in the context, Backgrounding the target and Targeting a concomitant of a referent, are scrutinized for a systematic analysis of major constructional variants of parenthetical constructions. Applying this novel and promising

approach, it proves sensible to delineate an attentional profile of (the) parenthetical construction(s) based on a(nother) pivotal factor, The generalized form-semantics association.

Chapter 81 - The social and embodied nature of language has recently been making strides into the understanding of language use and development. This chapter attempts to build upon and further integrate these perspectives by looking at metonymy from a sociocognitive as well as dynamic perspective. Firstly, Geeraerts' diachronic analysis of prototypicality and Peirsman and Geeraerts' prototypical patterns of metonymy are outlined in the context of the Peirsman and Geeraerts and Croft exchange regarding whether metonymy's part-for-whole relation is one of association or contiguity. Secondly, using metonymy as the principle example, this chapter proposes that communication is socially embedded through intersubjectivity and joint attention. Thirdly, it suggests the part-for-whole function of metonymy may also be similar to the whole-within-whole principle found in a *holon*. Fourthly, it proposes that this function is related to the dynamic complex systems principle of self-organization and that it acts to embody brain-body-environment triads. As such, the addition of more socially embedded and dynamically embodied grounding to metonymy's typical cognitive analysis in turn also suggests a similar triadic representation (i.e., dynamic socio-cognitive). Additionally suggested is that the understanding of prototypicality can benefit from being rendered as part of the dynamic process of the continuity of the mind, or as an *attractor landscape*. This chapter concludes with the proposal that the socially embedded and dynamically embodied nature of metonymy's part-for-whole or whole-within-whole prototypicality is an instantiation of the ability to off-load cognition onto the environment.

Chapter 82 - The main question addressed is whether emotional prosody of interjections, which show a non-arbitrary – indexical – relation between expression and meaning, could be integrated in the lexical representation, and whether this differs between high-lexical interjections and low-lexical interjections. Swedish high-lexical interjections have a more defined semantic content and can be understood without prosody, for example, hurrah, while low-lexical interjections are more ambiguous and can't be understood without the appropriate prosody, for example, oh. Lexical decision experiments were performed with high-lexical and low-lexical interjections having matching or mismatching prosody. The main hypothesis is that mismatch will slow down reaction times, especially for the low-lexical interjections.

The results of the experiments show that (a) stimuli with mismatch between lexical content and emotional prosody were recognized more slowly than matching stimuli, (b) low-lexical interjections were recognized more slowly than high-lexical interjections in mismatching conditions. The stimuli words were analysed acoustically with regard to F0 variation and duration, to pinpoint whether differing reaction times are dependent on acoustic variables or whether they depend on the mismatch condition as such. The comparison between the reaction times and the acoustic analysis shows that (c) reaction times are partly dependent on the specific emotion: different emotions have different durations and reaction times. However, the durations were not correlated with reaction times in matching and mismatching conditions.

The conclusion is that it is the mismatching prosody as such which affects reaction times, and that low-lexical interjections are affected more by mismatch than high-lexical interjections. It is further claimed that low lexical interjections with different emotional prosodies are in fact not homonymous, or polysemous, but that they can be seen as different morphemes since they have different meanings and different forms. Interjections have a

certain degree of emotional-prosodic specification in the lexical representation and emotional prosody is part of the phonological representation. Emotional prosody is thus part of the linguistic system, at the same time as the lexicon is not separated from other cognitive and communicative abilities, such as understanding and expression of emotional prosody in general.

Chapter 83 - 'Metamorphosis' by Franz Kafka is analyzed in this chapter from a cognitive literary perspective, mindful of recent advances in the field of creative cognition. Employing the 'Wave Method of Cognitive Literature Analysis', a procedural method developed by the writer of this chapter, this chapter displays the importance of social context and agents in the process of transforming fiction from first cognitive impulses of the writer to the final linguistic end product. Calling for a cognitive incorporation of the reader in the analytical process, in what is referred to here as the 'writer-reader dynamic', various linguistic aspects with a solid foundation in linguistic paradigms such as Blending Theory are examined for their impact on the creative spaces of the prototype reader. In doing so, this analysis finds that the 'container' image schema of Gregor Samsa's transformed body is of particular relevance, whilst the extended 'insect' metaphor is found to have varying mental activations depending on agents involved. The assumption of Stockwell that an interaction takes place between texts and humans in the reading of literature is thus built upon in this chapter.

Chapter 84 - The chapter substantiates the concepts of meaning re-conceptualization and approximation in communication as put forward in Lewandowska-Tomaszczyk. The present discussion locates the phenomenon of approximation in cognitive domains and shows the contents of approximative spaces, allowable substitutions in the domains as well as their tolerance threshold, and discusses the circumstances in which this process is evidenced in communication.

Chapter 85 - Many emotional and cognitive stimuli are perceived through the senses, especially through vision. As a result, metaphors mapping to THINKING or EMOTION often incidentally involve PERCEPTION. This does not mean that PERCEPTION is the target domain of the metaphors. In this chapter, the authors present examples from English and Chinese to argue that the role of PERCEPTION in THINKING and EMOTION has led to the miscategorization of numerous metaphors as synaesthetic, when in fact they map to THINKING or EMOTION rather than PERCEPTION. Furthermore, the authors suggest that differences between the domains of THINKING and EMOTION lead to the supposed division between "PERCEPTION IS RECEPTION" and "PERCEIVING IS TOUCHING", and the authors argue against the grouping of these under the heading of PERCEPTION IS CONTACT between a PERCEIVER and a PERCEIVED. This reclassification has the additional advantage of a stricter and more explanatory delineation of the range of metaphors considered synaesthetic.

Chapter 86 - Aphasia is a neurogenic condition while language is not. In the aphasia field, the direction of reasoning should go from brain injury to verbal impairment; the logical implication is one-way. When the logical implication is inverted, the conclusion is false. This principle allows predicting wrong inferences when the reasoning goes in the reverse order. Maybe that was the cause of the impasse suffered on the matter for more than a century and a half. When prospective approaches are not possible, and trying to attenuate the deficits of retrospective ones, then all the patients should undergo the same psychological evaluations. Post-mortem aphasia studies are always retrospective. Curiously, they are still taken as 'definite'. Aphasia patterns have to be discovered independently of their biological basis in

order to avoid circularity; besides, any combination of the latent language impairments has to be recognized. New models concerning the relationship between brain and language have emerged. Beyond the novelty of the instrument used for data collection, deep methodological considerations are necessary not only for discovering the dissociations and interactions among neuropsychological functions, but also for studying the consistency among the different approaches, samples and instruments employed. Nowadays, such consistency has been magnified by dissemination. The impetus to reach consensus with psychological events has led to the shocking situation in which an article published in 1984, for example, has been quoted almost 22,000 times by April of 2015 as synonymous with the procedure for demonstrating diagnosis. Considering the guidelines of 2011 for primary progressive aphasia (PPA) that number was almost 800 in just four years. If the conceptual and the operational definitions are confused, the theory gets into an endless loop. Additionally, the use of typical cases seriously restricts progress. Despite significant improvements observed in the psychological methods during the last years, the psychological outcomes are still puzzling. The ‘comprehension-expression’ organization and the ‘semantics- syntax’ one involve two different systems of classification which are not mutually excluding. Unlike the dissociation between comprehension and expression, the dissociation between semantics and syntax is not easy to observe, even using complex linguistic evaluations. Syntax involves relationships among semantic units but, simultaneously, produces a higher-order semantic unit. Researchers evaluate those levels of ‘semantic’ units to differentiate semantics vs. syntax. The methodology is unclear because changing parts involves changing the whole. Neuropsychology has two parts. If the validity of the psychological outcomes is doubtful, any language neurobiological model will be doubtful.

Chapter 87 - Acquired Childhood Aphasia (ACA) is a medical phenomenon which is still mostly unknown and often disregarded. One reason for this disregard is the rarity of aphasia in children often being emphasized, and the prognosis being assumed to be more favorable for children and adolescents than for adults. Another common reason for the disregard is the lack of understanding the clinical picture of aphasia in children. The provided chapter offers a broad overview of possible definitions, symptoms, prognosis and outcomes of Acquired Childhood Aphasia and the impact on quality of life for the affected children and adolescents and their families. It goes on to show that the prognosis is not as favorable as often proclaimed, and impacts the affected children and their families in numerous ways. Finally, this chapter points out possibilities of therapeutic intervention and provides examples of measures of support for the families.

Chapter 88 - People who develop aphasia must adjust their lifestyle and learn to cope with the activity limitations that result from their disability. Aphasia can profoundly affect a person’s capacity for academic achievement as well as their occupational competency, social participation, and ability to manage finances. This is especially true for young people, who have yet to fully learn how to participate as a member of society. Young people who acquire aphasia are likely to have a poor record at school and have difficulties completing higher education and getting a job. They also might be unable to pass a written test for a driver’s license. Young people with aphasia who wish to contribute to the community and be engaged in social activities might not achieve these goals and might feel isolated. In the worst case, they might shut other people out of their lives and withdraw from society. In this chapter, the authors describe the long-term prognosis of three individuals who became aphasic in their childhood or youth and discuss how young people with aphasia can best be rehabilitated.

Chapter 89 - The concept that aphasia is caused by subcortical lesions dates back to the 1970s. However, this subject is still controversial, even today. Many researchers believe that the cortex is the neural center for cognitive functions, including language, and aphasic symptoms observed after subcortical lesions may result, in fact, from functional impairment of cortical activity. In contrast, other authors have advocated a specific role of subcortical structures in language. Advancements in our understanding have resulted in a change of focus for this issue. The term subcortical aphasia encompasses cases of aphasia resulting from lesions located below the cortex, which includes lesions to the basal ganglia, thalamus, and white matter. Advancements in our understanding of the fascicles that travel over the white matter and that connect different cortical areas related to language have revealed that white matter lesions can produce various changes in language. Thus, to elucidate the role of subcortical structures in language, unique injuries to the basal ganglia and thalamus must be separated from those that affect the white matter. The aim of this chapter is to present evidence for the specific involvement of the basal ganglia and thalamus in vocal production, speech, and language. Hypophonia, difficulties in speech initiation, disfluency, syntactic deficits and semantic-lexical disorders are specifically discussed. Thalamic and basal ganglia lesions seem to accompany more complex deficits of language. As the entire cortex has access to subcortical structures, even Broca's and Wernicke's areas, through cortico-subcortical loops, subcortical structures are predominantly integration structures and thus can participate in different aspects of communicative function. The participation of fronto-subcortical circuits and the integration with the posterior cerebral areas has been proposed. Subcortical structures possibly play an important evolutionary role in language acquisition by humans. Basal ganglia and the thalamus may have adapted its own *modus operandi* for speech functions. The cortico-subcortical network and the interrelationship between corticality and subcorticality should be considered to fully comprehend the function of language.

Chapter 90 - This chapter describes consequences from aphasia from the perspective of those affected and their close relatives. Nine persons with lived experiences of aphasia contribute to data by means of interviews, published books and diaries, and seventeen close relatives narrated about their situation as informal caregivers. All that information was interpreted in three parts in accordance with a lifeworld hermeneutic approach. The first, which dealt with existential consequences of aphasia, indicated that the intentional, non-verbal act when something is recognized *as* something is *not* affected by aphasia. Aphasia merely affects the world of symbols, which is necessary for interaction with others. It is therefore connected with feelings of alienation, inferiority and shame in social settings. The second part, which dealt with the issue of professional aphasia care, suggests that adequate care from the affected person's point of view presupposes a secure base and a caregiver who recognizes and trusts the patient's ability to think and communicate albeit not always verbally. In the third part the investigation is directed to close relative's situation. It is suggested that a life together with an aphasic person means being used as a bridge between the aphasic person and the surrounding world. This leaves close relatives with a lonely burden of responsibility. Finally a synthesizing analyse suggests that aphasia management practice includes care and support as a mutual concern and a shared responsibility for professional carers, close relatives and community service. The principles for that are outlined under seven main heads.

Chapter 91 - From the simplistic explanations of Wernicke's and Broca's, to the latest investigative headways made into the understanding of intricacies involved in the use of the spoken and written words; modern science is still in the process of understanding Aphasia. The use of radiological and pathological diagnostic modalities in the study of language deficits has helped in the recognition of two categories of aphasia. The acute and sub-acute presentations seen mostly in association with cerebrovascular accidents, CNS infections, and head trauma shows involvement of specific parts of the perisylvian language network which is located in the left hemisphere in majority of right as well as left-handed individuals. Based upon the evaluation of spontaneous speech, naming, comprehension, repetition, reading and writing, and diagnostic imaging these aphasia are divided into central aphasia and the disconnection syndromes. The central aphasia, namely Wernicke's and Broca's are due to damage of the two classical, though not anatomically discrete language centers bearing the same names. The disconnection syndromes are a result of damage to areas of the language network other than the classical centers and include Transcortical and Conduction Aphasia among others. The slowly progressive aphasia caused by neurodegenerative diseases are referred to as Primary progressive aphasia (PPA). In order to simplify understanding of these aphasia and thereby help find cures these aphasia have recently been classified into the agrammatic, semantic, and logopenic variants. Management and prognostic issues pertaining exclusively to language disruption are widely studied in the aphasia with actual presentation. The mainstay of treatment is speech and language therapy; however some drugs are also showing promise especially when combined with language therapy. In post-stroke aphasic patients there is a strong correlation between initial severity and eventual recovery. Although most improvement occurs in the first few months, late language therapy has also shown benefit. Ongoing research also points to the potential utility of transcranial magnetic and electric stimulation for the treatment of certain aphasia.

Chapter 92 - Aphasia after stroke is a common and disabling symptom, which can recover in the weeks, months or years following brain injury, showing that the adult brain can reorganize to adjust to impaired functions. Standard rehabilitation approaches aim to improve the deficient function through speech and language therapy (SLT). In parallel with increasing knowledge about central nervous system plasticity, different adjuvant interventions have been recently implemented to enhance the outcome of speech and language therapy. One of them consists in increasing the intensity of SLT in order to obtain better recovery. This is achieved for instance with computer-assisted therapy (CAT) or with constraint-induced aphasia therapy (CIAT) approaches.

A second approach tested the combination of a number of drugs with SLT, with the aim to increase its effect. The mechanism thought to underlie enhanced recovery with the addition of specific drugs includes increasing attention and learning through modulation of neurotransmission or restoring metabolic function. Several substances have been assessed, including noradrenergic drugs and drugs acting on the dopaminergic, glutaminergic, gabaergic, and cholinergic systems.

Finally, another, still experimental, intervention in stroke rehabilitation consists of neuromodulation via non-invasive cortical stimulation, e.g., through transcranial magnetic stimulation (TMS) or direct current stimulation (tDCS). These techniques have recently been proposed to potentially endorse functional recovery after stroke through (i) enhancing excitability of the stroke hemisphere or (ii) suppressing the non-stroke hemisphere to reduce its potential interference with functional recovery of the stroke hemisphere.

While both treatment intensity and TMS have led to several promising results on efficacy in aphasia rehabilitation, the effect of pharmacotherapy seems to be less straightforward. In the present chapter the authors will perform a review of recent literature on the effects of these approaches as potential adjuvant to standard SLT in the rehabilitation of aphasia.

Chapter 93 - Language impairments are frequent in stroke, especially in the hyper acute phase, occurring in 15 to 50% of stroke patients. Recovery from aphasia remains difficult to predict. Language impairment still exists in at least 50% of initially aphasic patients one year after stroke. Post-stroke aphasia is a major source of disability that can lead to impaired communication, reduced social activities, depression and a decreased likelihood of resuming work. The role of the stroke unit in improving morbidity, mortality and recovery has been clearly demonstrated. Nevertheless, the need for intense and sustained acute management of aphasia in specialized stroke units remains controversial. The recent validation of a tool to rapidly screen for aphasia (LAST) after stroke allows for its early detection and management. Early detection of aphasia after stroke may improve outcomes by taking advantage of the synergy between intensive speech therapy and early neural reorganization. Daily re-evaluation will facilitate tailored rehabilitation sessions, multidisciplinary management by the stroke team, and development of educational resources for patients and their caregivers. Standardizing protocols for identifying and managing aphasia requires the co-operation and coordination of the entire stroke team, along with the daily presence of speech therapists. These considerations are crucial for patients in the stroke unit to achieve the full benefit of the management proposed in this chapter, to ultimately promote better long term functional prognosis.

Chapter 94 - In this chapter it is emphasized that there are only two fundamental forms of aphasia, which are linked to impairments in the lexical/semantic and grammatical systems of language (Wernicke-type aphasia and Broca-type aphasia, respectively). Other aphasic syndromes do not really impair language knowledge per se, but rather either some peripheral mechanisms required to produce language (conduction aphasia and aphasia of the supplementary motor area), or the executive control of the language (extra-Sylvian or transcortical motor aphasia). A new classification of aphasic syndromes is suggested. In this proposed classification a distinction is established between primary (or “central”) aphasias (Wernicke’s aphasia—three subtypes—and Broca’s aphasia); secondary (or “peripheral”) aphasias (conduction aphasia and supplementary motor area aphasia); and dysexecutive aphasia.

VOLUME 1

Chapter 1

**LANGUAGE ASSESSMENT OF ACTION/VERB
PROCESSING IN PATIENTS WITH PARKINSON'S
DISEASE: A CRITICAL ANALYSIS THROUGH THE
MULTILEVEL MODEL**

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ABSTRACT

Verbs are the best lexical items to verify the effects of motor learning in language processing. However, compared to nouns, this category has received less attention in studies about lexical disturbances in neurological diseases. Difficulties in verb/action processing have been found in patients with Parkinson's disease, suggesting that frontoestriatal and subcortical areas contribute to the semantic processing of verbs. This finding highlights the possibility of verifying the assumptions of the Embodied Cognition (EC). According to this theory, language processing of action verbs would engage areas involved in planning and execution of the actions represented by those verbs in the motor cortex. The literature in this field has pointed to conflicting results and action/verb cerebral representation, and its impact in language difficulties in Parkinson's disease have been intensively debated. These controversies may be studied in terms of the multilevel

model (Kemmerer, 2014) that predicts that the design of the task will require differential access to the motor features of the verb meaning and that areas related to visual perception, particularly the lateral posterior temporal cortex play a role in semantic processing. The type of task and psycholinguistic variables need to be taken into account since they can measure different levels of semantic processing. In addition, in order to check EC assumptions, studies must contrast distinct types of verbs, for instance action vs. emotional/psychological; biological vs. non-biological; verbs requiring and not requiring tools. Another semantic feature of concern is specificity. Kim and Thompson (2004) distinguish light and heavy verbs and discuss their different speed of deterioration in neurodegenerative diseases. Considering this panorama, this chapter will present, a summary of the different approaches about action/verbs semantics, current debates about verb neural representation and an analysis of the evaluation directed to patients with Parkinson's disease. A Pubmed and Scopus search was conducted in December/2014 using the terms "action verb" OR "verb" OR "verbs" AND "Parkinson's disease" with no time restriction. We retrieved 35 studies and selected 22 for analysis, excluding reviews and studies not related to action/verb semantics in PD. The methodology and findings of those 22 studies were analyzed and contrasted with theories that explain the neural representation of action/verb semantics, in particular the multilevel model and Embodied Cognition accounts. The challenge for new studies is to identify those semantic properties, understand how they are related to cortical processing and develop suitable tools to analyze these features in different profiles of Parkinson's disease.

Keywords: Parkinson disease; multilevel model, embodied cognition, verbs, lexical/semantic processing

INTRODUCTION

Verbs are the best lexical items to verify the effects of motor learning in language, but the study of neural lexico-semantic representations has neglected this category and focused on nouns for a long time. Difficulties in using verbs were described by Pick in 1917 (in Critchley, 1970), and the Neuropsychological interest for this class of words initially concerned their morphosyntactic function. At the last decade of the last century, selective difficulties for verbs and nouns were shown in patients with cerebral focal lesions (Miceli, Silveri, Nocentini & Caramazza, 1988; Caramazza & Hillis, 1991), as well as after the degeneration that occurs in Alzheimer's disease (Kim & Thompson, 2004). The interest on the difficulties to process verb meanings by patients with motor disorders is even more recent and has had implications for the Embodied Cognition theory. According to this theory, language processing derives from experience, and thus the semantic processing of action verbs recruit areas involved in planning and executing those actions in the motor cortex. However, the literature in this area has pointed to conflicting results regarding action/verb cerebral representation and its impact on language difficulties in motor disorders such as Parkinson's disease.

This chapter has the purpose of discussing the results of a systematic review about action/verb processing in patients with Parkinson's Disease (PD), presenting the current panorama in this area of research. Before addressing the pathology, however, we will present the set of studies that made scientists draw their attention to the production of verbs in PD. First, we will describe some important concepts about the semantics of verbs. We follow with

a brief history of the theoretical landmarks, which promoted interest in the study of neural representations of verbs and the current controversies. Finally, we present the results of our systematic review and analyze the methodologies and main findings of 23 recent studies for a critical discussion of the neural representation of action/verb semantics in terms of the strong and weak versions of the Embodied Cognition theory. In this context, we emphasize the contribution of multilevel models to interpret the controversial findings of the studies. We focused on the semantic processing elicited by different tasks and the points to be considered in future research.

THE SEMANTICS OF VERBS

Verbs and nouns present many syntactic and semantic differences. These systems require distinct mechanisms: while the lexical-semantic system is based on declarative memory, the syntactic system corresponds to procedural memory (Ardila, 2012). In addition, verbs have a unique syntactic role; they act as the center of a sentence, linking the other elements.

In the semantic level, when compared to nouns, verbs represent actions and “relational” concepts (Gentner, 1981), while nouns refer to objects or events. Also categorization differs between the two grammatical classes. Hierarchical models propose that nouns are categorized according to the group they belong (i.e., *elephant* is a wild *animal*, big, and has a trunk, etc.), answering to a question “WHAT IS IT?” (Rosh & Mervis, 1975). Verbs are categorized according to HOW the action is held (i.e. *running* is *walking fast*) (Miller & Fellbaum, 1991).

Kim and Thompson (2004) proposed a hierarchical categorization of verbs based on higher or lower levels of specificity. On the top, we find “light verbs”, those who have little semantic information, but an important syntactic role (i.e., *can*, *to be*, *to do*, etc.). Then, generic and specific verbs, which possess richer semantic information associated with their meanings. Specific verbs are more complex and demand more cognitive resources in their processing, e.g., *to run* is semantically more complex than *to walk*, because *to run* is one of the possible ways *to walk*. Thus, semantically simpler verbs – the generic verbs – can be used in broader contexts, whereas semantically more complex ones – the specific verbs – are used to refer to more restrictive actions. For instance, the action represented by the verb “*to cut*” can be held in different ways: with a knife, with the hands, with a scissor, etc. while “*to saw*” is held in only one way and requires a tool.

Specificity is an important feature in language processing. This was evidenced both in lexical development and in language deterioration. Older children use more fluently specific verbs (Tonietto, Parente, Duvignau & Gaume, 2008), while in Alzheimer's Disease and Semantic Dementia, the occurrence of generic verbs is higher (Kim and Thompson, 2004; Méligne et al., 2011).

Another semantic classification was proposed by Levin (1993), which considered syntactic and semantic features. In an exhaustive study of the English language, the author found more than 200 verb classes, all of which can be grouped as similar in meaning. Many studies in Neuropsychology and Neuroscience of Language used this classification, usually employing some of the proposed categories to generate assumptions on their neural correlates, which depend on the semantic properties of the verbs. For instance, in action verbs research, Kemmerer (2008), used fMRI to record brain activity elicited by five broader

categories: Running (e.g., *to run, to walk*), Speaking (e.g., *to whisper, to yell*), Hitting (e.g., *to hit, to poke*), Cutting (e.g., *to cut, to slice*) and Change of State (e.g., *to crack, to smash*). In this study, verbs were classified according to their semantic features: ACTION, MOTION, CONTACT, and TOOL USE, and the author held a neuroanatomical prediction to verify whether semantic knowledge is grounded in sensorimotor systems, the basis for the Embodied Cognition approach, detailed below. Kemmerer (2008) highlighted the variability of these classifications according to the semantic structure of a language and the need of cross-cultural studies.

Thus, we have a hierarchical model of verbs' categorization concerning the level of semantic specificity and verified both in language development and in its dissolution due to different forms of dementia processes. However, the order in which specificity facilitates neural processing, as well as how it affects verb processing in patients with motor degenerative disorders has not yet been studied. On the other hand, anatomical hypotheses were postulated from the syntactic-semantic features of verbs and the development of those models was only possible due to the evolution of Cognitive Neuropsychology, detailed below.

THEORETICAL MODELS THAT PROMOTED THE VERBS NEURAL REPRESENTATION STUDIES

The recent increase of studies focusing on neural correlates of verb processing and their difficulties depended on the theoretical evolution of Cognitive Neuropsychology. In this field, language is considered a complex activity, which involves different mental processing. In an initial period, the models used a computational metaphor or a hypothetical neural connexionism, and the modularity notion proposed by Fodor (1983). In this modularity proposal, language, as other cognitive functions, was seen as an "encapsulated" process, and thus, could only be studied separate from other functions. Computational models were replaced by the so called "Cognitive Revolution", led by Bruner (1986). This revolution replaced *meaning* by *representation*, and so, language became the center of human cognition. A decade later, language studies turned to integration to other systems, as working memory and attention (e.g., Gathercole & Baddeley, 1993).

Despite the interaction between different cognitive functions, language was still analyzed separately from other systems. The semantic knowledge was considered as an organization of abstract concepts and, thus, independent from sensory-motor processes. Furthermore, besides recognizing memory and attention interferences in language, this theory (nowadays known as *amodal* theory), does not consider the body as a participant of semantic knowledge.

A new proposal on acquisition and development of psychological capacities arises from Embodied Cognition theory (EC) (Shapiro, 2011). This approach proposes the integration of perceptual, linguistic, and motor functions when trying to understand internal, as well as external, individual phenomena. From this associative perspective, such information processing can recruit adjacent areas even if these areas are specialized in other functions (Wilson & Foglia, 2011). Linguistic processing approximates *meaning* to the real object or action, and language is no longer understood as an abstract representation of the world.

The EC returns to Wittgenstein's (1953) ideas that propose that lexical learning is directly related to the individual interaction with the world. Thus, to EC the subject associates the meaning of the actions that he performs and the objects with which he interacts to the description of those given by the external world, integrating movement, perception, and language. Thus, the body is seen as the cause or condition for cognitive constitution, establishing an interdependent relation between processing and bodily relation with the world. Therefore, verbs are the lexical items per excellence to verify the effect of motor learning through language (Shapiro, 2011; van Dam, Rueschemeyer & Bekkering, 2010; Barsalou, Simmons, Barbey & Wilson, 2003).

The mirror neuron theory supports EC theory (Kohler, Keysers, Umiltà, Fogassi, Gallese & Rizzolatti, 2002). The former, through studies with apes, postulates that when observing an action and/or planning it, motor and premotor cortices are activated, respectively. In the language field, linguistic learning results from experience with the external world, and therefore semantic processing of action verbs, would activate the same motor and premotor cortices. Therefore, to EC theory, holding, observing and describing an action would evoke the same neuronal apparatus, in other words, when we say the word “walk” the mental homunculus actually moves (Pulvermüller, Härley & Hummel, 2001; Barsalou et al., 2003).

However, EC findings are not supported by all experimental data and those controversies favor the maintenance of explanations in terms of the amodal model. This model, as said above, postulates that the words' meanings in the lexicon are independent from perceptual inputs and motor outputs. The debate between these two positions (i.e., EC and amodal model) promoted the advancement of the current knowledge about neural representation in healthy subjects and motor system pathologies, as well as the proposal of a conciliating approach: the multilevel model (Kemmerer, 2015). Thus, before analyzing the studies of verb processing in patients with Parkinson's disease we will present, in the next section, a brief panorama of the discussions of neural correlates of action/verb processing.

CONTEMPORARY MODELS ABOUT NEURAL VERB REPRESENTATION

Firstly we will explore some of the work that, based on the EC theory, find verbs activating motor areas (primary motor cortex M1; precentral gyrus and several premotor cortex areas) or areas responsible for movement perception (posterolateral temporal cortices - PLTC and Middle temporal area MT+). This approach is called strong Embodied Cognition position. Then, we will illustrate some of the work of the authors that defend that concepts of verbs are independent from movement representation and modality-specific regions, and instead organized, according to semantic aspects of verbs, the amodal model. Lastly, we will present the multilevel model, a weak version of the EC theory.

Strong Embodied Cognition Position

The idea that verb processing is different from noun processing arises from double dissociations found in studies with aphasic patients (for a review see Vigliocco, Vinson, Druks, Barber & Cappa, 2011). Studies of focal neurological lesions have shown that the

lexicon is represented by different neuronal networks through grammatical word differences: anterior frontal areas would be responsible for verbs representation and temporal areas, for nouns. However, recent studies with patients with cerebral focal lesions have shown that verb processing demands a large neural network, and thus it is unlikely that clear separate areas for nouns and verbs exist. Kemmerer, Rudrauf, Manzel and Tranel (2012), proposed six different tasks requiring expression, comprehension and semantic similarity judgments of verbs, and evaluated 226 brain damaged patients using this set of tasks. Sixty-one patients had difficulty in one or more tasks; four had difficulties in all tasks and the rest had a complex dissociation and association between tasks. Despite the left hemisphere predominance of the difficulties, an extensive neural net was found to be related to these deficits: the inferior frontal gyrus; the ventral precentral gyrus, extending superiorly into what are likely to be hand-related primary motor and premotor areas; and the anterior insula, the ventral postcentral gyrus; the supramarginal gyrus; the posterior middle temporal gyrus. The authors concluded that their results confirmed EC's postulates.

Shapiro et al. (2005), tried to replicate the findings of double dissociation in aphasics in an experiment using PET scans with healthy participants. The findings of that study also showed prefrontal cortex activation in verb processing, while temporoparietal areas bilaterally were activated in processing nouns.

Trying to specify the relationship between language and motor functions, from EC theory, Pulvermüller et al. (2001) hypothesized that associative learning – also called semantic learning – recruited the neuronal network responsible for bodily movements for mouth, hand and leg actions. Mouth action verbs would be represented cortically in a more restricted area in the inferior frontotemporal region; hand-action verbs, in inferior and medial frontotemporal areas; whilst leg-action verbs would have a more extended processing, involving superior frontal sites.

The studies that used fMRI technique to address the semantics of verbs, having support of Pulvermüller's associative theory, found, as expected, representation of mouth-action verbs in the inferior prefrontal gyrus (Hauk, Johnsrude & Pulvermüller, 2004; Tettamanti & al, 2005; Azzis-Zadeh, Wilson, Rizzolatti & Jacobini, 2006; Rüschemeyer, Brass & Friederici, 2007), or in the posterolateral temporal cortex (Kemmerer, Castillo, Talavage, Patterson, & Wiley, 2008). When leg-related action verbs were studied, the majority of findings pointed to activation on the prefrontal or superior frontal motor area, which coincides with the homunculus motor representation (Hauk et al. 2004; Tettamanti et al, 2005; Kemmerer et al. 2008), except for the findings of Azzis-Zadeh et al. (2006), which showed a prefrontal medial activation to movements. However, neural representation of movements held by the hands still present contradictory findings. Azziz-Zadeh et al. (2006) found that hand's and leg's representations overlap, which contradicts the assumptions of the somatotopic theoretical model.

Specifying the semantics of verbs held by hands, Kemmerer et al. (2008) showed that, in distinguishing movements of clapping hands from cutting with hands, the former activated superior motor areas and the last ones, medial premotor and temporal and frontoparietal network. To these authors, the presence of premotor areas is justified by a higher demand on planning skills, since the vast majority of cutting verbs need tools. Moreover, Yang, Shu, Bi, Liu & Wang (2011), taking advantage of the uniqueness of the Chinese writing, designed an experiment with 3 stimuli groups: (1) hand verbs containing hand root; (2) tool verbs containing tools root; and (3) tool verbs containing hand root. They found that all verbs

elicited left medial frontal cortex and left inferior parietal activations and, activation on the premotor region was found for all conditions when subtracting hand movements in the analysis. Tool verbs, as in a previous study, presented higher connectivity, with frontoparietal representations and activation of the posterior temporal cortex. The authors interpreted this dispersion as evidence of higher semantic processing demands to accomplish the complex task of verb comprehension involving tools. Despite the quite interesting experiment design, focusing on Chinese writing aspects, which implicates a hand or an instrument symbol, the results may be biased by the fact that the writing of these roots gives extra implicit information.

Besides motor areas, verb comprehension also recruits the temporoposterolateral cortices (PLTC and in the left middle temporal gyrus (LMTG)). The pioneer study, showing that the LMTG activation related to verbs, was published by Martin, Haxby, Lalonde, Wiggs & Ungerleider (1995). Later, several works showed that this activation occurs in different tasks, such as generation of action verbs, semantic relatedness judgments, and semantic triads. Moreover this activation was found in different languages using as stimuli different types of verbs, as action verbs and mental state verbs (for a review see Bedny & Caramazza, 2011). PLTC is close to the middle temporal area (MT+), a brain region that processes movement of animate beings. Despite the debate regarding the function of the PLTC in verb processing, this area in the left hemisphere presents greater responses to motion-related than non-motion related verbal descriptions (Tettamanti et al., 2005). Thus, for the authors that support the strong position of EC, the activation of those areas subserve a high-level motion perception (Kemmerer, 2015). However, a great amount of the work designed to address the strong EC position has problems in controlling stimuli regarding psycholinguistic variables and in analyzing the processing demands of the task. Neuroimaging studies show a joint activation for verbs and nouns, indicating that semantic representation of words (nouns or verbs) rests on lexico-semantic traits (or psycholinguistics criteria), such as concreteness (Lee & Federmeier, 2008), frequency (Vigliocco, Vinson, Arciuli & Barber, 2008) and ambiguity (Lee et al., 2008; Li, Jin & Tan, 2004).

On the other hand, controversial findings on the neural representation of hands' movements may be explained in terms of the use of these verbs. Hand actions are developed only in superior mammals, and in the humankind they present vast semantic variability. It is probable that this diversity in hand actions have biased the tasks. For instance, in the experiment designed by Pulvermüller et al. (2001), there are verbs that denote very specific movements, as *to box* and others, very generic as *to beat*. The neural differentiation of objects and verbs, when taking into account the concreteness criterion, which distinguishes action verbs from mental/psychological verbs, is already known (Crepaldi, Berlinger, Paulesu, & Luzzatti & et al., 2011), but so far, we haven't found studies about neural organization considering verbs' specificity, which classify action verbs in generic and specific verbs.

The importance of psycholinguistic factors on brain processing was shown by Hauk, Davis, Ford, Pulvermüller e Marslen-Wilson (2006). Through a regression analysis of electrophysiological data, they showed that the time course of processing of the lexicon psycholinguistics features varies. Their results suggest a bottom-up processing in lexical decision tasks, in other words, the visual aspects, as word extension, are detected early in time, followed by word frequency, and the semantic aspects are processed later in the brain. It is worth noting that this work used nouns whereas the time course of different lexical aspects of verb processing has not been studied yet.

Lastly, task complexity can influence experimental results. Tasks that demand higher cognitive resources favor noun/verb dissociation, stressing the role of executive functions and working memory (Cappa, 2012; Cristescu, Devlin & Nobre, 2006). Thus, differences found between psycholinguistic features and neural correlates indicate the need to control the morphosyntactic and semantic variables between the grammatical groups (nouns/verbs) and a carefully design the experiment, choosing an adequate task, which is fundamental to analyze the activation pattern (Cappa, 2012).

The Amodal Model

Strong criticisms of experiments that defend EC theory come from researchers that support the amodal model. This model postulates that semantic representations are accessed independently from the modality of the stimuli. This theory starts with many experiments focusing on nouns, and only later focused on verbs semantics. Even if there is a small number of works focusing the semantics of verbs, they had great repercussion in the debates about neural representation of verbs.

The main postulates of this theory are: (1) if the same brain area is activated by different modalities when concept is presented (oral, written words or figure presentation), it is possible to conclude that this brain area represents that conceptual knowledge is supramodal in nature; (2) the overlapping of brain areas when activated by different tasks does not mean that the same mechanism is involved, and lastly, (3) the amodal theory defends that it is not possible to know whether rapid processing of motor areas involved in verb comprehension is the cause of semantic comprehension of these verbs or a consequence of retrieving semantic knowledge (Mahon & Caramazza 2008; Caramazza, Anzellotti, Strnad & Lingnau).

To verify if the same brain areas are activated by different presentation modalities of a concept, Fairhall & Caramazza (2013) designed an experiment in which subjects performed a typicality rating of one item within its category. Nouns of five semantic categories were: tools, clothes, fruit, birds and mammals. Different blocks presented the written word or its picture. Using Representation Similarity analyses (RSA) they found that two brain regions, the posterior middle/inferior temporal gyrus (pMTG/ITG) and cingulate/precuneus (CP) responded in a similar way to all categories.

In another study, Wei et al. (2013) used living (animals) and artifact categories in three different tasks (object picture-naming task, object picture associative-matching task; object sound-naming task), and non-semantic tasks as control. Through a regression analysis, the authors observed that the LMTG was the core component that accounted for 74% of the semantic processing performance variation only on semantic tasks and not on number processing, which is a non-object-concept task. The authors conclude that the LMTG is the core of a network that undertakes the conceptual processing for nouns. Furthermore, Bracci Cavina-Pratesi, Ietswaart, Caramazza and Peelen (2011) have shown that the lateral occipital temporal cortex responses to tools overlapped with hand responses, but not with other object categories. They proposed a high-order semantic function in the visual cortex.

Bedny et al. (2008) designed an experiment to verify whether the activation of PLTC is due to sensory-motor features of verbs or, in an alternative interpretation, if these activations result from a modality independent processing. They elaborated an experiment of semantic judgment of varying pairs of verbs, regarding the amount of motion information. As expected,

higher activation in PLTC were obtained with verbs when compared to nouns. Moreover, the verb's advantage was independent of the amount of motion, that is, action and abstract verbs obtained higher responses than nouns. The authors claimed that the PLTC is responsible for the retrieval of events. Conceptual properties of the events are organized according to their semantic aspects and do not involve the sensory-motor experience.

This study compared neural activations between normal seeing individuals and congenitally blind ones. It caused a big impact and supported amodal position, verifying whether visual experience influences the semantic processing of verbs. Bedny and Caramazza (2011) tested the hypothesis that the LMTG modulates representation of motion of verbs, and thus whether verb concepts are grounded in a sensorial representation of the motion. They compared sighted and blind subjects in verb processing. Following the authors, if the EC hypothesis is true, the LMTG would be altered in those who had never seen. The study showed that the LMTG was equally engaged for nouns and verbs and that the same profile was found in congenitally blind individuals. For the authors, those results showed that LMTG storage concepts are independent from the subjects' experiences and, therefore, do not depend on its visual representation. However, it is possible that this region stores some kind of movement representation, which, in sighted individuals, has a visual aspect.

Even with radical oppositions to the EC, the authors consider that “although the neuroanatomical data suggest that word comprehension is supported by modality-independent representations, there is also wide evidence that language, perception, and action are not isolated modules, but rather interact dynamically” (Bedny & Caramazza, p. 92).

The Multilevel Model

Kemmerer (2015), in the context of EC or Grounded Cognition, proposed a model according to which the meanings of action verbs would recruit precentral motor areas, but not *always* neither in a *fast* or *automatic* fashion. Recruitment of motor areas would vary according to the demands of the task and would not be always necessary for comprehension. Instead, it would happen only when motor simulations were needed to process meanings. In addition, depending on the context or type of verb, the lateral posterior temporal cortex would also be activated to allow visual perceptual processes that would enrich the semantic representation or attempt to complete it in order to compensate deficits in patients with diseases affecting the motor system (Kemmerer, 2012).

Despite neurophysiological evidences in healthy subjects, which favor the strong version of the EC account, findings with patients presenting diseases affecting the motor system have not been entirely consistent with its assumptions (for a review see Silva et al. 2014). Therefore, the multilevel model proposed by Kemmerer (2015) is a conciliating alternative and manages to explain some of those controversial findings. This model has two important advantages: (1) it explains the absence of a dramatic language deficit in verb/action processing, predicting that motor simulation is optional rather than necessary; (2) it contributes to the description of the underlying mechanisms to compensate for action/verb semantic deficits, and explains the variability of behavioral results among patients with motor diseases.

The multilevel model brings some elements of the neurobiological model of semantic processing proposed by Binder e Desai (2011), i.e., the assumption that the demand on

sensorial and motor simulations is quite variable in several modalities for comprehension (e.g., spontaneous oral language, object recognition, reading). For example, given the speed of spontaneous oral language it would be unlikely that all the content was fully processed with simulation or re-experience of motor, sensorial and emotional aspects. In that situation, abstract schemes or concepts, whose nature is not modality specific, would be accessed quickly and manipulated for communication, demanding nothing or almost nothing of visual imagery or motor simulation. On the other hand, situations in which unfamiliar/infrequent sentences are employed or where specific lexical elements are inserted would require access to the complete semantic representation, including perceptual and motor areas as well as emotional ones (although empirical evidence on the latter is scarce as they have been neglected by most studies in this theme). In sum, in Kemmerer's account the higher the familiarity and the amount of contextual information, the less necessary it is to access detailed representations in modality specific systems.

Kemmerer's model proposes that knowledge has a flexible architecture in which low level systems (specific modality - for action, perception and emotion) and high level systems (multi- and cross-modal) denominated *hubs* have different roles in semantic processing. The author incorporates to his model the assumptions of the Hub and Spoke framework (Pobric, Jefferies & Lambon Ralph, 2010). That model has empirical evidence from patients with semantic dementia (or semantic variant of primary progressive aphasia) whose main symptom is a progressive difficulty to process word/object meanings affecting comprehension and expression (severe anomia) and that correlates with progressive atrophy of the temporal poles bilaterally. The Hub and Spoke model (Pobric, Jefferies & Lambon Ralph, 2010) considers that the anterior portions of the temporal lobes are critical centers for semantic processing and that they are modality-invariant or amodal, whose function is "binding together the cortically distributed sensory and motor features of concepts; organizing those representations so that the boundaries of concepts are delimited more or less precisely, thereby allowing individuals to efficiently judge category membership" (Kemmerer 2014, p.322). It is worth to highlight that the idea of a semantic hub, though quite defined in the literature, is not consensual. For instance, Binder and Desai (2011) reject the notion of a single semantic hub and support that depending on the nature of the information, other areas would also work as hubs. The temporal pole would be a hub for static semantic knowledge (integrating information to the "what" route) whereas the parietal inferior lobe would integrate semantic aspects related to events (to the "where" route). These aspects still require empirical evidence, however, both hub models (unique or multiple) argue in favor of the hypothesis that semantic knowledge access may not necessarily involve the activation of specific modality areas (spokes) and that a weaker version of EC would be more appropriate to explain the findings in patients with diseases that affect the motor system.

Another issue of debate is the number of spokes and the modality specific information processed by them. In Kemmerer's model, two spokes are highlighted, one with motor features of the verbs (in motor areas/precentral cortex), and another that process visual motion features/high level motion perception.

According to the author, part of the semantic processing of action verbs would require implicit and automatic retrieval of different types of visual movement patterns (similar to the activation of motor patterns proposed by the strong version of EC). In his work with brain damage, these visual patterns recruited the posterolateral portion of the left temporal lobe in all the categories of verbs he studied (Kemmerer, 2015). The author recognizes, however, that

the activation of these areas could also reflect post-comprehension visual imagery or also more abstract perceptual aspects, since his findings could not be conciliated with the aforementioned ones of Bedny et al. (2012) and that support the amodal theory. Bedny et al. analyses indicated that the left PLTC responded significantly more to verbs than nouns, regardless of the amount of motion conveyed by the words, and regardless of whether the subjects were sighted or blind.

Now, we turn to the question of when and how these features (motor and perceptual) would be accessed for the semantic processing. For that, in the following session we analyze the findings of the systematic review in verb/action semantics and PD.

VERB DIFFICULTIES AND EC ACCOUNTS IN PARKINSON DISEASE

PD is a neurodegenerative disease characterized by bradykinesia (slowness of movement), rigidity, tremor, gait, and posture problems. It is caused by a progressive loss of dopamine in the nigrostriatal tract, reducing the projections of the basal ganglia to the frontal motor regions. The deficits in the dopaminergic pathways cause hypo-activation of the supplementary motor area and primary motor cortex, and hyper-activation of the ventral premotor cortex, reflecting a compensatory mechanism (Kemmerer et al., 2013; Cardona et al., 2013). PD is an interesting framework for investigations on the role of the frontal network in the Semantics of verbs due to the possibility of exploring, in the same patient, the ON and OFF effects induced by medication (Levodopa) and by Subthalamic Nucleus (STN) stimulation. In a recent review, we summarized the findings in this area and discussed their contributions to support the Embodied Cognition theory (Silva et al., 2014). Here we update the literature review in order to discuss controversial findings in terms of cognitive demands and different approaches of cognitive models that explain semantic memory processes.

A Pubmed and Scopus search was conducted in December/2014 using the terms “action verb” OR “verb” OR “verbs” AND “Parkinson’s disease” with no time restriction. We retrieved 35 studies and selected 23 for analysis, excluding reviews and studies not related to action/verb semantics in PD.

As shown in Table 1 the tasks used to study verb processing in patients with Parkinson’s disease used several different tasks: spontaneous conversation, naming picture; word generation, verbal fluency; lexical decision tasks; imagery, go/non/go task; semantic judgment tasks and action compatibility effect (ACE).

Free Oral Conversation

One of the postulates of the multilevel model is that more automatic tasks would not always require motor regions for semantic processing, and thus we would expect that the use of verbs in spontaneous conversation would not be affected in PD. That was the finding of Nikumb (2014), which to our knowledge was the only study to explore the semantics of verbs in natural conversations. The author recorded conversations and compared PD patients and controls (spouses) regarding the mean number of verbs produced per minute.

Table 1. Tasks used to study verb processing in patients with Parkinson's disease

Study	Task	Performance of PD Group Relative to CG	PD Group ON or OFF State/ DBS ON or OFF State
Nikumb (2014)	Free oral conversation	Participants with PD produced significantly fewer high-motion verbs compared to low-motion content verbs. However, control participants also produced significantly fewer high-motion verbs compared to low-motion content verbs. T	Not applied.
Letter et al. (2012) (EEG)	Passive Reading	Not applied.	In ON the differences in density currents were found to be larger in left-hemispheric areas than in the right-hemisphere. Activation of motor, pre-motor and parietal areas was lateralized according to clinical motor signs.
Silveri et al. (2012)	Passive Reading	No interaction between grammatical class and group was observed. PD patients were slower but as controls whereas accuracy had ceiling scores for both groups.	No effect of DBS ON and OFF state.
Bertella et al. (2002)	Naming	A noun/verb dissociation with a relative verb deficit was found in patients affected by PD	Not applied.
Cotelli et al. (2007)	Naming	PD patients were more impaired in action naming than in object naming. Manipulability factor was not significant.	Not applied.
Rodríguez-Ferreiro et al. (2009)	Naming	PD patients presented a significant impairment in action naming compared to object naming, whereas healthy participants and Alzheimer disease patients did not have differences.	Not applied.
Herreira, Rodríguez-Ferreiro & Cuetos (2012)	Naming	Not applied.	RT differed for high and low motor content pictures in PD patients off medication, compared to the same patients.
Silveri et al. (2012)	Naming	PD group had poorer performance (accuracy and reaction time) on naming nouns and verbs than healthy control group. Significantly worse performance was observed in PD. In DBS OFF state patients had less accuracy as compared with controls in naming actions, but not for objects.	PD patients were significantly more accurate and faster in the DBS-ON stimulation condition in both object and action naming. Differences in DBS ON x OFF were observed for verbs. PD DBS-ON patients had fewer anomias and semantic errors in naming actions. No correlation of naming performance and memory and executive functions was observed in PD group

Study	Task	Performance of PD Group Relative to CG	PD Group ON or OFF State/ DBS ON or OFF State
Nguyen et al. (2013)	Go/no Go task	An interaction was found between PD dominance and upper and lower limb verbs. Patients with greater upper limb deficit were slower in answering upper limb than lower limb verbs. However, patients with lower limb greater deficits did not show differences in responding to upper and lower limb verbs.	
Herrera, Cuetos & Rabinboca (2012)	Verbal fluency - phonological, semantic and action fluency.		T Differences in the total of words produced were observed in both the phonological and action categories between PD OFF/ON and PD OFF and healthy controls. There were no significant differences between PD patients ON medication and controls. Relative to frequency of words, PD OFF emitted words with higher frequency in action fluency than healthy control group.
Tomasino et al. (2014)	Lexical decision	Not applied.	Results pointed that accuracy not differed between groups. RT for action-related verbs was significantly faster for positive than negative commands in the DBS-ON, while they were identical in the DBS-OFF 50%
Fernandino et al. (2013a)	Lexical decision associated with priming effect and judgment task	Lexical decision task showed faster reaction time for both groups for hand-action verbs than for abstract verbs. Prime effect difference was not observed. In judgment task action verbs responses were slower than for abstract verbs	
Boulenger et al. (2008)	Lexical decision associated with priming effect		During OFF state of dopaminergic treatment no priming was found for action verbs, whereas recovery was found during ON state. Concrete nouns were not affected by the dopaminergic treatment.
Péran et al. (2003)	Generation task	Patients had the poorer performance for verb-verb and noun-verb generation but similar performance on noun productions. Patients had more grammatical errors in three tasks involving verbs. Significant negative correlation between performances on the condition that required a switch between category, i.e., noun/verb condition and Dementia Rating Scores	Not applied.

Table 1. (Continued)

Study	Task	Performance of PD Group Relative to CG	PD Group ON or OFF State/ DBS ON or OFF State
Castner et al. (2008)	Generation task	PD participants, regardless of Subthalamic Nucleus (STN) stimulation condition, produced more errors in the verb–verb condition	Semantic attribute of probes (visual or motor features) did not relate on response errors for PD participants (in the ON and OFF) and controls. In the PD ON stimulation condition, selection constraint (ratio of selection of words) was significantly correlated with mean error in the noun–verb condition and verb–verb condition
Crescentini et al. (2008)	Generation task	In noun generation, strong associations between stimuli and responses led to better performance in the PD group in this task. Relative to verbs, PD patients were significantly impaired in all conditions of verb production in comparison to the control group. PD patients made significantly more grammatical errors and no-response errors. Executive functions in PD group were associated with errors in verb generation.	Not applied.
Péran et al. (2009) (fMRI)	Generation task	No differences were observed between types of substantives, but relative to generation of actions. No correlations were observed between performance and UPDRS and cognitive scores. In fMRI data, severity of disease was associated with action generation in bilateral post-central girus, left operculum frontal area, left supplementary motor area and right superior temporal cortex.	Not applied.
Péran et al. (2013) (fMRI)	Generation task	Not applied.	Generation of action had more errors than Object naming (ObjN). GenA elicited significantly more activation than either ObjN in left prefrontal cortex, left middle precuneus. MSoA showed significantly more activation than ObjN in the prefrontal cortex bilaterally and in the parietal–occipital junction bilaterally. ON>OFF for [GenA vs ObjN] contrast showed mainly premotor areas and for [MSoA vs ObjN] thalamus and premotor areas. However, differences between OFF> ON did not show significant differences.

Study	Task	Performance of PD Group Relative to CG	PD Group ON or OFF State/ DBS ON or OFF State
Herreira & Cuetos (2012)	Generation task	PD OFF, ON and performance of control group were compared.	PD patients OFF medication said words less associated with the target compared with when they were on state. In the OFF state patients generated less semantic related responses for verbs than control groups, while PD ON have the same performance than controls. No differences were observed for nouns between PD OFF or PD ON and healthy controls.
Fernandino et al. (2013b)	Lexical/semantic processing of phrases	Patients, but not controls, were slower to respond to literal and idiomatic action than to abstract sentences. Groups did not differ in accuracy levels.	
Fernandino et al. (2013a)	Semantic similarity judgment	Accuracy was significantly lower for PD patients than for controls, while RT did not differ between groups. In PD group accuracy in the action condition was lower than in the abstract condition.	
Kemmerer et al. (2013)	Semantic similarity judgment	There was no effect of group, indicating that PD patients have the accuracy of control group. RT of action verbs and no-action verbs did not differ between groups.	Patients failed to respond to significantly more items in OFF condition than in ON. PD ON and OFF have the same accuracy. In RT, differences were in Cutting x Hitting in PD OFF < NC and PD ON < NC. RT for change of state were longer than psych verbs in PD ON < NC and PD OFF < NC. Non-parametric correlations were observed between PD OFF – duration of disease and accuracy in cutting and psych verbs.
Ibáñez et al. (2013)	Action Compatibility Effect	PD presented only differences in RTs in the neutral trials compared with compatible and incompatible trials. There was no ACE effect in PD group, in opposition of control group data. KDT accuracy was highly associated with the ACE. A negative correlation between hand-KDT error trials and the ACE.	Not applied.

Moreover, the occurrence of high- and low-motion verbs was quantified. No quantitative and qualitative differences were found between patients and controls. All subjects produced more low-motion verbs and no deficit was found in the PD group in this task when compared to the control group. Although the multilevel model prediction is that the degree of motion would affect the performance of patients with motor diseases, the degree of automaticity of the task could have facilitated the use of verbs by PD patients.

Reading Tasks

Reading can be classified as automatic processing, mainly for very frequent words and when the irregular grapheme-phonemic conversion requires a direct access to semantics. Letter et al. (2012) evaluated 7 PD Dutch patients through a silent reading task associated to EEG recordings and LORETA analysis and compared ON and OFF Levodopa states. The stimuli consisted of thirty hand-action verbs and 30 non-action verbs and the authors used a subtraction method to study the neural correlates of action verbs. Ten regions of interest were analyzed and consisted of five homolog pairs in each hemisphere: Precentral (premotor) cortex; Inferior frontal cortex, Dorsolateral prefrontal cortex (DLPFC), Superior temporal cortex and Inferior parietal cortex (part of the supramarginal gyrus). Higher current densities were found in the on-state as compared to the off-state in all evaluated brain areas and for some patients activation was lateralized according to clinical motor signs. Given the nature of the task and neuroimaging data, these results support the strong version of the EC theory. However, a limitation of this study is that the sample was quite small.

Silveri et al. (2012) investigated the impact of Deep Brain Stimulation (DBS) in a reading aloud task of nouns and verbs. The authors evaluated 12 PD patients that were instructed to read the words aloud as fast as possible. No differences were found between ON and OFF states. Moreover, a ceiling effect for reading accuracy was observed both for nouns and verbs, and PD were slower than controls in both grammatical categories. The results are discussed in terms of executive demands of the task. The authors propose that PD implies in an executive dysfunction, which impairs active lexical search as they find differences in naming (discussed below) but not reading. Another interpretation could be that the grapho-phonemic processing in reading a regular written system, such as Italian, could reduce the semantic processing of the verbs. Also it is possible that the Reading task was extremely simple for both groups and the greater RT obtained by the PD patients could be due to their motor limitations. Moreover, in this study, the major limitation is that it compares nouns to verbs instead of different verb categories.

The two studies that used reading tasks seem to present opposite results. It is difficult to compare them only regarding the task, since one required silent reading and the other reading aloud. Differences in their design could also have influenced the results. The former compared ON and OF Levodopa states and the latter DBS stimulation effect, thus their main objective was to verify treatment approaches.

Naming Tasks

Although a formal task, naming can also be considered an automatic procedure, since it is frequent in daily conversation and does not require complex semantic processing. Except for Herrera and Cuetos (2012) who investigated naming of high and low motion action verbs, the four other studies analyzed noun/verb differences. Two of these noun/verb studies (Bertella et al., 2002 and Cotelli et al. 2007) found a disproportionate deficit for verbs compared to nouns. Bertella suggested that their findings show the role of fronto-striatal system in verb processing, which could be in accordance to the EC model. However, Cotelli et al. (2007), besides noun and verbs comparison, tested the influence of a semantic attribute - manipulability (the involvement of fine hand movements), and found that performance of PD patients was not influenced by this feature but instead by the grammatical class of the stimuli, which would be in favor of the amodal model claim. However, manipulability was assessed in nouns and verbs (i.e., objects which can or cannot be manipulated and actions that do or do not involve fine hand movements), which may limit the interpretation of this finding.

Silveri et al. (2012) did not use a control group, but instead investigated On and OFF DBS effects. Only action naming was impaired in the OFF state and the findings were explained in terms of grammatical class differences and cognitive demands of the task. Silveri et al. used naming and reading tasks and found that only the former was impaired in PD. Therefore, their finding could also be explained according to the weaker version of EC.

The other two studies (Rodríguez-Ferreiro et al., 2009 and Herrera and Cuetos, 2012) compared PD patients' performance to healthy adults and Alzheimer's Disease (AD) patients. Rodríguez-Ferreiro used the classical verb/noun comparison and interpreted the verb difficulties in terms of the EC account. PD patients presented a significant impairment in action naming compared to object naming, whereas healthy participants and Alzheimer's disease patients did not have category differences. The authors propose that verb representation is grounded in neural networks in which motor brain areas contribute to their processing.

Finally, in the study of Herrera & Cuetos, the authors used a measure of performance that took into account accuracy and reaction times for high and low motion verbs. PD patients were seen on and off Levodopa and presented longer reaction times in response to all pictures when OFF medication. Moreover, regression analysis using RT differences between PD ON/OFF found that higher motor content verbs were more impaired in the OFF state. It is interesting to remark that the use of more fine measures, like RT, allowed the detection of a clear motion effect, not found in the study of Nikumb (2014). Thus, as expected by the multilevel model, in a more restricted situation there will be greater participation of the sensori-motor neural network.

In sum, even with some studies that have obtained opposite results, a deficit in naming verbs was found in patients with PD. Evidences of the multilevel model are obtained by the comparison between reading and naming tasks as well as by the relationship between the semantic attribute of motion of the verb, when very fine analyses are undertaken.

Go/Non Go Task

Using TMS to test the strong view of EC Nguyen et al. (2013) compared PD patients with upper versus lower limb dominance in a go/no go task. Target verbs were 30 limb, 29 lower limb and 30 psych verbs. An interaction was found between PD dominance and upper and lower limb verbs. Patients with greater upper limb deficits were slower in answering to upper limb verbs compared to lower limb ones. However, patients with greater deficits in lower limbs did not show differences in responding to upper and lower limb verbs. These results support Pulvermüller's theory of associative learning, and have refined the studies about PD patients and verb processing concerning the classification of the patients regarding their impairments. Go/no go task does not require deep semantic processing, but it requires a greater amount of attentional resources, and thus the interaction found can be influenced by executive capacities of the patients.

Verbal Fluency

Herrera, Cuetos & Rabiboca (2012) assessed 20 PD patients and 20 control subjects with four verbal fluency tasks: phonological fluency (words beginning in F), semantic fluency (animals and supermarket items) and action fluency (infinitive form of verbs, "things you can do"). Patients were asked to produce as many words as they could from each category in 60s, in ON and OFF Levodopa states. The total of words produced in the phonological and action categories differed between PD OFF/ON and PD OFF/Healthy controls. There were no significant differences between PD patients on medication and controls. An analysis of the frequency of the words produced in action fluency demonstrated that PD OFF emitted words with higher frequency compared to the control group. Results are explained in terms of dopamine dependency for lexical retrieval. The authors mention that patients have difficulties retrieving verbs with greater semantic action content that would be related with an under-activation of motor and premotor areas during the condition OFF medication. The qualitative results are in accordance to the multilevel model in the sense that less frequent or semantically more complex verbs will require motor simulations.

Lexical Decision and Semantic Judgement Tasks

Boulenger et al. (2008) developed a lexical decision task with priming in order to verify the effect of Levodopa. Stimuli were action verbs and concrete nouns. During the OFF state of dopaminergic treatment, no priming was found for action verbs, whereas recovery was found during the ON state. Concrete nouns were not affected by the dopaminergic treatment. These results support the role of motor system in action verbs.

The study of Fernandino et al. (2013a) applied lexical decision with priming (implicit task) and semantic judgment tasks (explicit task) in PD patients and healthy controls, testing the processing of action and abstract verbs in Parkinson's Disease. For the lexical decision task with priming, a set of 80 verbs and 80 phonologically legal pseudo words were used. Half of the verbs referred to voluntary hand/arm actions (e.g., *to grasp*, *to squeeze*), and the others referred to abstract concepts (e.g., *to depend*, *to improve*). The semantic similarity

judgment task used a set of 120 action verbs and a set of 120 abstract verbs (39 action verbs and 36 abstract verbs also appeared in the lexical decision task). The results in lexical decision tasks suggested that controls had faster reaction times for hand-action verbs than for abstract verbs, when in PD patients this effect was not observed. Similar to controls, patients' responses to action trials (2451 ms) were significantly slower than responses to abstract trials (2332 ms). In contrast, patients' accuracy in the action condition (.955) was lower than in the abstract condition (.975). No prime differences were observed. In the Semantic Judgment task, PD had similar results to controls as they had slower responses for verbs than for nouns. In contrast, in this task action verbs responses were slower for abstract verbs. The authors concluded that their results do not agree with general verb impairment among PD, but the differential impairment of the motor network on the two tasks was a "function of a core meanings associated with a word, which supports the amodal approach." Nevertheless, this study shows the impact of the tasks in implicit procedures and seems to favor the processing of action verbs while the explicit processing would give the opposite result, impairment on action verbs. The greater amount of cognitive semantic resources in the explicit task will also favor an interpretation according to the multilevel model.

Imagery Task

Tomasino et al. (2008) applied single pulse transcranial magnetic stimulation (TMS) in the hand motor area of the left hemisphere during three different tasks with action verbs: (1) silent reading; (2) motor imagery, that is, judgement whether the written verb involved hand rotation; and (3) judgment of frequency of occurrence in a newspaper. TMS did not alter the time of responses of silent reading and of frequency judgment whereas in rotation imagery task, responses were more rapid (compared to TMS vertex). The authors clearly postulate that their results do not support the strong EC view. Motor hand area is not mandatory for comprehension of verbs *per se*. Although the EC theory postulates that in order to understand a verb there is a simulation of an action, they only found motor area involvement in processing verbs when the task explicitly requires simulation of the action. Once more it is shown that the grounded representation of verbs depends on the type of task and the complexity of semantic resources required.

Generation Tasks

In these tasks participants are given a word and are required to generate a semantically related item in the same or in a different morphological category. Two intra-category tasks - noun-to-noun (NN) and verb-to-verb (VV) and two inter-category tasks - noun-to-verb (NV) and verb-to-noun (VN) are usually employed. This task is cognitively demanding because the subject must engage in lexical search and requires deep semantic processing to compare the probes with the responses to be given. Six studies used this task, and two of them associated the task to fMRI. In all five studies PD patients had a disproportionate deficit in verb generation compared to nouns. However, three studies (Peran et al., 2003; Castner et al.; 2008 and Crescentini et al.; 2008) explained the deficits in terms of the amodal model of semantic processing and attributed differences to lexical selection problem. Castner et al. (2008) tested

patients in STN stimulation condition (ON vs OFF state) and demonstrated that semantic attributes (visual and motor features) did not impact performance. The two fMRI studies (Perán et al., 2009; 2013) showed more activation of the left prefrontal cortex in verb generation. This area was also activated in manual simulation of the same actions, supporting EC theory. In this task the multilevel model predicted this activation and therefore we can conclude that these type of assessments can be useful to test the assumptions of EC in PD. Finally, Herrera e Cuetos (2013) invited patients and the control group to generate semantic related words based on 10 verbs (to sleep, to ask for, to stop, to cry, to cut, to touch, to climb, to jump, to run, to swim) and 10 nouns (flight, traffic light, mill, anchor, bus, cup, key, flute, umbrella, pen). Authors measured the strength of semantic association between response and stimuli, comparing with normative database responses in the healthy adult population. PD patients off medication said verbs less associated with the target compared with when they were on state. IN OFF state patients generated less semantic related responses for verbs than control groups, while PD ON have the same performance than controls.

Semantic Similarity Judgment Task

Kemmerer et al. (2013) exposed healthy controls (NC – normal control group) and PD patients in ON and OFF state in semantic similarity judgment task (SSJT) using three verbs in a triangular array — one at the top and two at the bottom — and the task was to indicate, as quickly and accurately as possible, which of the two bottom verbs are more similar in meaning to the one on top. For example: “*trudge limp stroll*”. Triangular array was presented in 5s followed by 1s of blank screen. PD patients failed to respond to significantly more items in OFF condition than in ON. There was no effect of group, indicating that PD patients did not perform significantly worse than healthy participants. Authors did not find accuracy differences between PD ON and OFF. Relative to RT, Kemmerer et al. (2013) observed that the RTs for change of state were longer than psych verbs in PD ON < NC and PD OFF < NC. RT of action verbs and no-action verbs did not differ between groups.

Lexical/Semantic Processing of Phrases

Fernandino et al. (2013b) investigated PD patients and healthy control subjects in a task of sentence plausibility judgements. Participants had to decide whether the sentence was plausible and to respond as fast and as accurately as possible by pressing one of the two response buttons with their preferred hand (all participants chose to use their right hand). Fifty nonsense sentences and 100 plausible sentences were presented. Nonsense sentences were grammatically well-formed but constructed so that the verb was semantically incompatible with one or both of its arguments (e.g., “*The business is pinching the sunset*”). The plausible sentences were divided into four conditions: literal action (“*The woman is pinching my cheeks*”), non-idiomatic metaphoric action (“*The cost is pinching the consumers*”), idiomatic action (“*The business is pinching pennies*”), and abstract (“*The business is saving cash*”). The 25 sentences in each of the three action-related conditions were built by combining a set of 21 action verbs – all referring to hand/arm actions – with different noun phrases. Patients, but not controls, were slower to respond to literal and idiomatic

actions than to abstract sentences. Groups did not differ in accuracy levels but in reaction times. The authors interpreted their findings in terms of the stronger version of EC. However, a gradation of activation of motor areas is proposed, according to semantic properties of the verb in the context of a sentence. This gradation and the differences in time, but not in accuracy, could also be explained in terms of the multilevel model.

Action Compatibility Effect

Ibáñez et al. (2013) evaluated PD patients and healthy control participants. Authors used the Action Compatibility Effect paradigm. Participants listened to sentences that implied an action with the hand in a particular shape as well as neutral sentences that did not imply an action with the hand. Participants indicated as quickly as possible when they understood each sentence by pressing a button using a pre-assigned hand-shape. No differences between compatible and incompatible trials were observed in PD; that is, differently from controls there was no ACE effect in the patients showing less participation of motor circuits. These results can also be explained by the EC account.

CONCLUSION

Controversies persist in this area with some researchers favoring the strong version of the EC theory, stating that integrity of the motor system is necessary to process action verbs even when used with figurative meaning whilst others support a weaker version of embodied cognition, that is, motor representations may enrich the semantics of verbs but are not necessary for the comprehension/production of verbs). However, the present review points out that controversial results may reflect the variety of objectives and experimental paradigms, which may influence the results and interpretations. Therefore, based on the multilevel theory, it is easier to understand the task effects. The clear cut between the amodal view and the strong EC account can be explained in terms of contextual cues and task cognitive demands. In summary, it seems possible to conclude that more automatic language use situations, such as spontaneous conversation, would not evidence the participation of the motor system in semantic processing. On the other hand, the embodied components are more consistent when the task requires deep semantic processing and more attentional and executive resources.

The studies that aimed at verifying the impact of pharmacological treatment and DBS have shown positive effects in PD. It is not clear though, whether the effects in semantic processing are due to better attentional and executive functioning or to specific effects on the motor system. Some studies point to the relationship between the type of motor impairment and lexical semantic processing; however we still don't have evidence of the several subtypes of PD. For future studies, we emphasize the need for identifying relevant semantic attributes and analyzing their impact in tasks requiring different levels of semantic processing. Few studies considered semantic attributes, and even fewer compared the same group of patients in different tasks. Therefore, the diversity of experimental approaches and tasks require the continuity of researches in this area to understand the effects of PD in language and treatment alternatives.

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Chapter 2

PREVALENCE OF SPEECH AND LANGUAGE DISORDERS: IDENTIFY AND OUTCOME AT THE LEARNING DISABILITIES*

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ABSTRACT

This chapter aims to acquaint the reader with the current debate on the prevalence of oral and written linguistic difficulties as a precursor of Specific Learning Difficulties (SLD). The barrier created by scientific literature in terms of the diversity of terminology regarding the definition of these pathologies – which clearly reflects the interests of various fields – has given rise to multiple nosological classifications to define the same disorder, which has in turn hampered a diagnostic classification. This situation, in addition to a historical constant of disagreement regarding the definition and identification of SLD, has led to the identification of SLD in a child who has shown no signs of intellectual, sensory, physical or perceptive impairment in their learning that would keep them from reaching the objectives for the course or corresponding academic year in which they are enrolled.

Some factors that influence the appearance of SLD are *Speech Delays* (SD) and/or *Oral Language Delay* (OLD), as well as *Written Language Delay* (WLD), especially reading difficulties, as shown in epidemiological studies indicating a high prevalence. Likewise, delays in different linguistic components (semantic and/or syntactic) also significantly affect the comprehension and assimilation of text content, leading to learning difficulties. Therefore, we understand the need for a more comprehensive study of the relationship between delayed linguistic components and reading comprehension

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and fluency, given the high rates of prevalence during the first years of school and the possible origin of academic disabilities among students with LD.

In this respect, knowledge of the prevalence of linguistic difficulties during early childhood can facilitate the early detection and prevention of LD in the student population. This is due to the fact that the majority of language and communication problems will appear in the classroom environment, which incorporates the demands and implications of the teaching and learning process.

A recent study (García-Mateos, Mayor, De Santiago y Zubiáuz, 2014) on the prevalence of language, speaking, voice and communication pathologies observed that, among the epidemiological profile of different pathologies present until adolescence, WLLD, OLD and SD constitute the greatest percentage as compared to other linguistic pathologies, and that gender differences were also present.

From this perspective, teachers are considered the most critical and responsible factor in the educational changes and improvements for the child. Nevertheless, teachers perceive certain limitations in their ability to intervene with these students within the classroom. We would therefore like to provide teachers with key epidemiological tools using the “*Precede-Proceed Model*” as an early detection and prevention device for Specific Learning Difficulties (SLD).

INTRODUCTION

1. Learning Difficulties. Historical Perspective, Updating and Clarifying Concepts

The study of Specific Learning Difficulties (SLD) has attracted great interest in education, due to its high prevalence and to the difficulty in defining and agreeing on its definition, explanation, detection and intervention. Its definition and the difficulties that are included within it have changed over the years, depending on various stages that have been marked or influenced by the context or the socio-political-educational framework that has surrounded them at all times. In the study of SLD there has been a change in trend, from medical understandings, to other more educational approaches, which has generated different theoretical models to explain the SLD from different paradigms giving different explanations to such disorders [1]. SLD constitutes a controversial category because of the lack of a broad consensus in defining or naming them, receiving nosologies as Diverse Learning Disabilities (NJCLD, 1998), Specific Learning Disabilities (IDEA, 1997), Learning Disorders (APA, 1995), Learning Disabilities (Craig, 2001), Learning Disabilities (Smith, 2003) or last name provided in the DSM V TM as a Specific Learning Disorder (APA, 2013) [2]. This diversity of approaches and designations means that there is no a unanimous agreement on the definition and explanation thereof.

Over time, the improvement of social conditions and general knowledge about the problems and improvement of diagnostic tests have managed to consolidate the area of Learning Disabilities as a specific discipline. This has been helped, too, by the consensus established in recent times in the international scientific field, professionals in the subject and expert associations in educational contexts around the American conceptual definition of learning disabilities proposed by the *National Joint Committee on Learning Disabilities* (NJCLD, 1998). In response to this proposal “*Specific Learning Disabilities is a general term that refers to a heterogeneous group of disorders that manifest themselves in difficulties in*

the acquisition and use of skills of listening, speaking, reading, writing, reasoning or mathematical abilities. These alterations are intrinsic to individuals and can take place throughout the life cycle. Problems in self-regulation conducts, social perception and social interaction can coexist with the LD, but do not constitute in themselves a LD. Although Specific Learning Disabilities can coexist with other handicaps (eg, sensory impairments, mental retardation, emotional disturbance) or with extrinsic influences (such as cultural differences, insufficient or inappropriate instruction), they are not the result of those conditions or influences" [3] (NJCLD, 1998, p.65).

This definition, which is established through five foci or criteria (Table 1), has among its objectives the differentiation of SLD from other conditions that may affect poor school performance, eliminating thus the possibility that any school problem be classified as learning difficulty and distinguish it from what it would be the difficulty or inability to learn or *Learning Disabilities*. Reference is made to certain specific problems related to learning skills in the field of oral or written language, calculation, motor and perceptual aspects, etc... It is noted that the SLD appear throughout the life cycle, ie, they are not only related with the infant stage but are conceptualized more as an intrinsic factor which causes poor academic performance [4, 5]. In this definition, and from a primarily educational focus, the essence of what we understand by SLD is included with the aim of making decisions of service provisions in the educational field [6, 7].

Table 1. Five Components of Specific Learning Difficulties

Criteria Conceptual Definitions of the SLD (NJCLD-1998)
i. Heterogeneity
ii. Significant difficulties in the acquisition and use of understanding, speaking, reading, writing, and math reasoning skills.
iii. Intrinsic character
iv. Assumption throughout the life cycle
v. Conjunction with other disorders or with extrinsic influences.

Despite the consensus already provided by this definition (NJCLD, 1994), it is also true that it can not be operationalized and empirically validated. Therefore, and with intent to fill these gaps, new attempts have emerged in recent years in order to come up with an operational definition. In this sense, Santiuste and González-Pérez (2005, p.119) make the following definition: *"Learning disabilities are constituted by a heterogeneous set of problems whose origin is probably a dysfunction of the central nervous system. They manifest themselves primarily with problems in the linguistic field and processing defects in major cognitive factors (attention, perception, memory) and, derivatively, in the area of the main instrumental disciplines (reading, writing, mathematics) and, secondarily, in various areas of the curriculum (experimental sciences, social sciences, second language). They are also associated with personality disorders, self-concept and sociability and these can occur throughout the life cycle of the subject" [8]*

From this operational definition these authors establish a set of basic features attributable to children with LD:

- a) Intellectual capacity within the normal range according to standardized tests.
- b) Inadequate academic performance presenting deficiencies in basic instrumental areas (reading, numeracy, writing, and language).
- c) Alterations in cognitive processes (perception, attention, memory) and problem solving.
- d) Chance of developing psycho or socio-environmental problems that interfere with the success in learning.
- e) The cause is primarily focused on the Central Nervous System (CNS) such as emotional disturbance, dysfunction or injury.
- f) It isn't the result of intellectual disability, sensory deprivation, serious emotional severe emotional disturbance or cultural and instructional factors.

Operationally, the approach also provided by the National Joint Committee (NJCLD, 1998) [3], materializes in the diagnostic criteria gathered in two major international diagnostic systems: ICD-10 International Statistical Classification of Diseases and Health Problems (WHO; 2001) and DSM-V (APA, 2013) [9]. The first classification system establishes as specific school learning disorders the ones referred particularly to reading skills (F81.0) specific spelling disorder (F81.1), specific calculation disorder (F81.2), mixed developmental learning school disorders (F.81.3), other developmental disorders related to school learning (F81.8) and disabilities in the development of unspecified school learning disorder (F81.9). Meanwhile the DSM-V (APA, 2013) changes the name of learning disability (LD) by specific learning disorder (SLD) which includes the reading difficulties disorder (reading impairment), writing difficulties disorders (written expression impairment) and Mathematics difficulties disorder (with impairment in mathematics) [5, 10]. The latter classification, as in the *Public Law 108-446, the Individuals with Disabilities Education Improvement Act* (IDEA, 2004) also proposes to eliminate as identification criteria the discrepancy between intellectual ability and academic performance.

In the international context, the SLD have been established in models based on the discrepancy between IQ and performance of students in such a way that the identification of the student with SLD was performed when he/she showed learning alterations learning in their academic performance with regard to their learning potential (DSM-IV, 2002). This criterion, called into question today, led to the concept of LSD as a synonym of the existent discrepancies between academic achievement and intelligence [4].

The application of these rules and the consistent, historical disagreement on the definition and identification of SLD led to a high percentage of children being placed in special education classrooms when they could have received instruction within the regular classroom. This fact prompted students to be identified with SLD, ie, false-negative, and though they didn't present difficulties in the intellectual, sensory, physical or perceptual level, they do have gaps or errors in their learning. In this way, they are prevented from achieving the objectives of their current academic year [11]. This has led to the prevalence rates to become high. For example, in the report issued by the US Department of Education during the academic year 2000-2001, more than 48% of a population of 5.7 million children and adolescents were classified with LSD. Similarly, in the study conducted in Spain by the aforementioned authors, 56% of a population of 5738 students from 1st to 4th of ESO (Obligatory Secondary Education) showed to have SLD according to the teacher criteria in not achieving the course objectives or cycle. These data show that the SLD category is being

used by educational institutions as a nonspecific category which causes many children to fail in the school system [11].

For instance, since the beginning of the research on learning disabilities in reading and under the paradigm of discrepancy criterion, it was assumed that delayed readers with high IQ (dyslexic) would be part of a different group of delayed readers with low IQ, because they show a different profile related to cognitive and neurological aspects. However, up to day there is no empirical evidence that truly there exists, neurological, cognitive and aetiological differences between dyslexic and reading disabilities, as demonstrated by studies in the context of the Spanish investigation in recent years. In the field of cognitive processes involved in reading (ie, speech perception, phonological awareness, speed, naming, verbal working memory, orthographic processing and syntactic processing) it has been shown that differences of lexical access between normoletores and dyslexics are not interfered with the influence of intelligence, ie a low IQ score does not necessarily predict low reading achievement [12]. Likewise, students identified with SLD in reading do not seem to benefit more from instruction in phonological processes than those showing no discrepancy in IQ-reading performance [13]. That is, the same is evidenced in the field of arithmetic in which it is found that the cognitive profile of students with and without IQ-performance discrepancy is very similar. The interaction between IQ and reading achievement appears to be interfered with transparency-opacity of the spelling system of the language in which the child learns to read. For example, the study in English-speaking Canadian children found that students with low IQ Verbal (<80) was associated with poor performance in reading and spelling. This association was not found in Spanish children [14]. The authors concluded that the interaction between IQ and low reading performance could be more significant in opaque orthography (ie, English) rather than in orthography (ie, Spanish).

From an evolutionary perspective, Jimenez, Rodriguez, Guzman and Garcia indicate that difficulties in cognitive processes in students with reading difficulties become worse as the academic level requires greater reading skills, maintaining these differences with normoletores [15].

Therefore, from these operational approaches related to the analysis and development of the cognitive processes involved in learning, we understand that the SLD can be detected and identified from the reading, writing and arithmetic skills. We must not forget the important role of oral language proficiency in the development of these capabilities, ie the development of speech and language. From the context of the teaching-learning identification, some criteria are needed in order to help us determine the cognitive and linguistic profile of students so as to provide an appropriate intervention if necessary.

From this area, the start of a child schooling period may increase the language requirements for socialization and learning. During the Kindergarten Stage -3 to 6 year's of age-, their linguistic competence extends and strengthens beyond the familiar patterns. In fact, the school environment becomes for a given number of children, the context where is most clearly evident the linguistic difficulties in their different levels of severity. These preschool years are critical for the consolidation of oral language proficiency and it is at this time, when teachers more easily observe significant differences regarding their oral language proficiency. This circumstance allows the first comparison of students, verifying that in most cases students proceed normally while others only get it with certain difficulties or therapeutic support. These early school years are crucial for language development test and for observing who can operate for themselves-natural course-, or who will need a more professional support

so as to complete this educational cycle with proper oral competence to accomplish other learnings.

The role of teachers, therefore, will be the key to an early detection of the different language pathologies because, in most cases, it is the teacher who first detects these and seeks assistance from the specialist when children need support to cope with the pace of the class. However, teachers perceive themselves with important knowledge gaps regarding the effective detection of language disorders. In the field of SENL (Specific Educational Needs Language) teachers request more training and practical experience, as well as specialized advice for the detection, assessment and intervention of children with SENL [16]. In this sense, the previous investigations found that the training guidelines of secondary school teachers regarding the intervention in the delays of oral and written language inside the classroom, improves effectively those skills related to writing and reading comprehension of students with lower language proficiency [17]. Therefore, we believe that the educational system should be able to adapt to the needs of the child within the classroom setting, adjusting the pace and school demands to each student with problems.

2. Acquisition of Oral and Written Language Learning and Its Difficulties with Relationship

The relationship between *Speech and Language Delays*, as part of the same continuum with *Written Language Learning Difficulties* (WLLD) has been demonstrated by numerous studies [18, 19, 20, 21, 22] and its impact on *Specific Learning Difficulties* (LSD) [23, 24] and emotional and / or behavioral problems [25, 26, 27]. In the acquisition of written language the child must learn the grapheme-phoneme correspondence to transform the letters into sounds (reading) and sounds in words (writing). Until about 4/6 years of age, children are not aware to identify the phonological structure of spoken words that will allow them later to turn them into written words. Thus, any mistake in phonological auditory discrimination will hamper the identification and order of phonemes in word structure, thus hindering access to their meaning. This meaningless and slower recognition of words makes it difficult to assimilate these words and their meanings, producing a smaller lexical repertoire and less reading practice which requires more effort, thus, causing children to become less effective and demotivated readers due to the delays in their phonological system [28,29,30,31]. We must consider that language difficulties, being these oral and written, are present throughout the school years [32, 33] and can continue affecting decoding words and reading fluency still in the final stages of Compulsory Education [34, 35, 36, 37, 38] favoring learning difficulties and / or behavior problems in the classroom [39, 40, 22, 41]. Therefore it is found that the problems in phonological decoding directly affect both the learning of writing (natural spelling) as well as reading fluency [42].

Subsequently, from the first years of primary education, and once the phase of "*learning to read*" has been overcome, the child should be able to "*read to learn*". The reading performance which enables learning can be observed in terms of understanding and assimilation of the text, verifying that it is the semantic-syntactic language development, both comprehensive and expressive, the factors that greatest influence on this process. From this approach we could highlight that reading comprehension can be predicted from the expressive and comprehensive language competence in relation to semantic lexicon and morphosyntactic

acquisition [16, 41, 30], the same applies to writing [43]. In this sense, the previous study shows that language delays affect reading comprehension primarily during the primary stage. It is observed that reading comprehension is directly affected by the lack of vocabulary (comprehensive semantic language delay), but this does not happen when it affects the comprehensive syntax. This could be explained by the superficial understanding of the text generated from the content-rich "keywords" [44, 45, 54]. This type of learning would require the constant help of the teacher, who adapts the syntax in order to assimilate and integrate the ideas in the text. Similarly problems were recorded in written expression when the expressive language delays are of syntactic nature. Finally, the mixture of-semantic / syntactic difficulties of comprehensive and expressive nature hindered reading comprehension as well. We can conclude, then, that inadequate written language proficiency greatly influences the acquisition of curriculum learning, since the slow and costly exercise of reading and writing originates in turn, poor motivation towards learning from these written texts because assimilation needs reflection and abstract ideas contained therein. Therefore, learning from the written text still requires even greater efforts that will most likely increase the occurrence of the SLD [46, 47]. We believe that it is necessary to acknowledge the diversity of linguistic pathologies in the written language as well as the SLD, given this relationship between the oral language delays and the school stage at which they become visible. To know and identify oral pathologies in time, will allow detecting potential learners with SLD before starting written language learning, thus, adopting prevention measurements of WLLD and SLD.

3. Prevalence Studies on Linguistic Difficulties at the Beginning of Schooling Years

In order to accurately adjust the data related to the population at risk with linguistic pathologies, we believe that the epidemiological prevalence studies are those which most precisely describe this diversity [48].

This type of descriptive studies and their results allow the so-called "*Generator Hypothesis Cycle*" [49] and will enable, from the obtained data, to pose new hypotheses and new experimental studies. This research cycle requires three basic steps: 1) Identify, define and describe the problem; 2) establish by prevalence studies associations among the different variables which have been analyzed with statistical values; 3) establish criteria for causality with the elaboration of new experimental studies or clinical trial.

In the field of epidemiological studies framed in the SLD we have three main research areas: the prevalence of Delays, Speech and Language, the influence of different Special Educational Needs (SEN) and finally the relationship between Difficulties in Written Language Learning (DWLL) and appearance of the SLD.

Regarding the prevalence of oral communication difficulties, the review of Law, Boyle, Harris, Harkness and Nyle investigation shows that most prevalence studies have focused on Speech and Language Delays of Specific nature and these only address children aged between 3 and 11 years old. Most of these investigations were also carried out from medical-phoniatric areas [50].

Overall, the results show that about 5.95% of children suffer from some type of oral language disabilities. However, these figures could be higher if we include those derived from

other more serious diseases such as cognitive, auditory, motor and / or neurological deficits, which may double their percentages of occurrence [51, 52, 33] .

Another important factor in these types of studies is the exclusion of Learning Difficulties in the Written Language as a diagnostic category itself. The recent studies shows that the epidemiological profile of the different language pathology throughout the life cycle are WLLD (19.1 out of the sample) which exceed a high percentage of the rest of oral language pathologies.

These WLLD children are between 6 and 10 years of age (60% of WLLD cases) and between 11 and 15 years of age (33.9% of these same cases). Likewise, a high percentage of Phonological delays (14.2% of the sample) and Primary Language Delays (8.1% of the sample) are found in the epidemiological profile compared to other language pathologies [33, 53].

Regarding age, it is observed that the largest number of medical consultations stands up to 15 years of age, decreasing significantly after adolescence. These data confirm previous researches that also have the highest prevalence rates from early childhood through adolescence. These results confirm previous researches which show that the demand for care is also located preferably up to the end of adolescence [51, 55, 56, 57, 58].

Moreover, there is very little research on prevalence of the SLD, which analyzes their presence in the classroom and that can be compared with the presence of other communicative disorders [59]. However, we note that one of the major setbacks in such investigations is related to the differences in the definition and diagnostic classification of the different language pathologies and of the SLD.

In this chapter we wish to emphasize the high prevalence of language difficulties which are present during the early school years because the data provided by the International Dyslexia Association (2002) show that 15 to 20% of the school population has a learning difficulty based on language. This circumstance, as will be dealt with later from prevalence data, becomes one of the precursor's factors to be considered for the identification and diagnosis of SLDs.

In relation to the school population research results show that a high percentage of children with SEN have some type of LD. According to the DSM-IV-TR (2002) between 2-10% of all school-age children have some LD derived from different SEN. However, other studies show different percentages. This discrepancy may be due to differences in classification and diagnosis of various LD. In this regard, recorded data between 5-10% [60], between 16-20% [61] or between 10-15% [62]. Finally, the data provided by the US Department of Education (2002) raises the amount up to 48% of the school population. In this sense, the broadest longitudinal study carried out regarding the association between the LSD and Language Delays in the same students from Primary to Secondary school level show that the order of prevalence of SEN is located in the following ranges of prevalence: 17.93% LSD in Primary and then 19.10% in Secondary; a 13.4% of Language Difficulties is found in Primary and a 12.40% of cases in Secondary again. As noted, Learning Disabilities increase in proportion as students advance in schooling. The same is reflected in the classification and diagnosis of SLD by the DSM-IV-TR (2002) indicating that, within their different categories, the WLLD are the most common learning disorder within the school population [59].

Accordingly, the recent work [63] shows that 21.4% of the school population has one or more SLD being the WLLD those with higher prevalence (12.3%) opposite to the mathematical difficulties, with (3.0%) or the combination of both (6.0%). Likewise, the study

also shows that the SLD are more common in girls than in boys (3.5%), and which in turn the girls showed more SLD more related to language proficiency unlike boys whose prevalence of SLD was more related to difficulties in mathematics. However, we should consider the fact whether these difficulties in mathematics are due to problems in the calculation or to mathematical reasoning where language skills are essential [64]. Another important finding is that the group of younger school students shows one or more specific learning difficulties.

Finally, the study of the prevalence of the SLD associated with WLLD shows some factors that must be taken into account. One of the most important, already referred to above, is the question of transparency or opacity of language phoneme-grapheme correspondence being the English language the one which gets highest recorded prevalence in reading difficulties. Within the SLD, most studies agree in noting that problems in written language have the highest prevalence among this type of language difficulties. We can find percentages ranging from 80% [65, 66] and 5-17.5% [67] of the school population studied.

The most detailed study recorded that 16.9% of secondary students have some type of SLD, which has been generated due to difficulties in learning written language, and of these, 3.2% are due to problems with reading and 7, 6% with writing. Regarding reading difficulties they observed that 32.5% are Surface Dyslexia, 21.2% Phonological difficulties and 10% Mixed. Likewise, with regard to problems in acquiring writing, it is noted that 52.7% of students have difficulty with spelling rules, 18.1% with natural spelling grapheme / phoneme -Conversion and 29, 2% in both [11].

Finally, the fact that the dreaded academic failure starts in the first years of primary - although the final dropout occurs during the stage of the Secondary stage in the forms of-failing, grade repetition, absenteeism... [68] leads us to propose that the early detection of oral and written language difficulties can be a major factor and that its early intervention becomes one of the initial steps for the prevention and treatment of SLDs.

Therefore, an appropriate, specialized care is needed inside the classroom setting. Having specialist teachers who can intervene and advise the rest of teachers will be the key that will lead to the decrease of the high proportion of children with some form of SLD. Specific care services are needed, not only from the health sector, but also within the school context, thus enabling teachers the possibility of planning the number and types of pathologies that appear more frequently in classrooms. In the case of the SLD, identifying children at-risk before their learning process is hampered, is an essential task to be carried out by the teachers themselves.

4. Action Guidelines for Teachers: Model for Preventive Application

Different studies agree in identifying risk factors that predispose SLD and that can be grouped into: personal variables (family history of dyslexia, language delays, metalinguage skills and / or basic cognitive processes), contextual variables (family sociocultural familiar or school environment) or the combination of both [69]. Of all these, language delays of phonetic-phonological nature would affect the learning of reading [70, 71] and the delays of lexical-semantic and grammatical nature would do so on the understanding and learning at text level [72, 73]. Similarly, inadequate development of metalinguistic skills especially phonological- awareness [31, 74] along with deficits problems in verbal -memory basic cognitive processes, selective attention and perception - [75, 76] do have a direct impact on the appearance of WLLD and derived from these, also on the SLDs.

Given the above, we can wonder what would be the best intervention strategies to prevent the SLD from the linguistic competences. Kaderavek & Sulzby (2000) recommend training in phonological decoding and vocabulary extension [77]. They also advise the training in discursive skills as a key competence for reading comprehension and writing. The previous investigations suggest that the practice of inferences and anticipations regarding the contents of the text becomes one of the most remarkable preventive factors for assimilation and learning [78]. We believe that this will be one of the main keys in the prevention and correction in SLD.

Thus, we could raise the idea that if we set the delays in speech and writing, as diagnostic criteria for possible SLD, many children would benefit from early attention established on preventive strategies instead of re-educative ones when these difficulties appear: "Prevent before than cure ". This idea was raised at the *Precede-Proceed* linguistic model from epidemiological studies as a guideline for intervention and language pathology detection. We believe that, in the case of the SLD can be also applicable [48].

As a model of intervention, and according to new operational definitions of SLD the response to intervention (response-to-intervention) is postulated. This criterion arises in 2004 from the review of legislative regulations in the United States Act IDEA The Individuals with Disabilities Education Act. The main novelty that it provides for the procedures in the identification of SLD is the replacing of the *discrepancy* criterion (the use of CI is not required for the identification of students with SLD) by the response to intervention. *Heterogeneity* criteria are maintained including eight domains (oral expression, listening comprehension, written expression, basic reading skills, fluent reading, mathematical calculation and mathematical problem solving), as well as grounds for exclusion, though at present, it is carried out with more complex procedures in which evidence that the student has received specific instruction regarding the specific academic area is requested. It is also required a continuous monitoring at different intervals of time on the response of the prospective student with SLD and the instruction followed, thus emphasizing the important role of education in the prevention and identification of SLD [4, 10]. This refers to an early assessment on the response of a pupil who presents sufficient indicators of obstacles for his/her future learning. In this way, a personalized intervention program based on scientific research can be planned, which matches their individual needs in order to make educational decisions depending on the evolution of their learning. It is all about an adequate assessment of the student's response to that instruction and intervention.

Nowadays, it is common to talk about three levels of intensity and six steps in the procedure for considering intervention [79, 10, 80]:

- ✓ *Level one* (preventive intervention). Implementation of quality education programs in what refers to general education for the whole class. This requires continuous assessment with brief tests in order to identify underperforming students or those at risk of developing a SLD. To carry out a follow up for 1 or 2 months on their responses to the use of these general education programs.
- ✓ *The level two* (intervention). It should be used as soon as possible and includes reinforcement in small groups (1-5 children), offered by a specialist tutor or a special education teacher. At this level programs and strategies are designed to improve teaching *level one* offered to all students. The intervention at this level will last approximately 9-12 weeks with a continuous assessment. The end of this phase can

lead to three decisions: (a) the student returns to the general class, (b) the student receives a second application program on *level two*, (c) those students who have not improved at this level, may go to *level three*.

- ✓ *The level three* (specific education). At this level the SLD is diagnosed and intervention is offered. The intervention, which may occur individually or in small groups is tailored to the student's needs and involves continuous evaluation. As improvements start taking place and the student reaches the expected grade level, he/she must be taken back to the *level one* and if he fails again in the mainstream class he/she can return to *level two or three*. We can proceed in this way until the student can stay at *level one*. Only if the student does not respond positively to interventions in series will the risk of having SLD be estimated and then the use of special education services evaluated.

Therefore, from the perspective of a model of response to intervention, well-founded intervention programs are proposed, which may be applied intensively on those schools where it is suspected that there may be a future SLD [81, 10]

Therefore, the main rationale underlying the model *response to intervention* is *prevention*, so that, many children without disabilities or serious disorders who participate in these programs (inside or outside the regular classroom), are no longer intervened dramatically and are incorporated into the normal course routine with their age mates. Otherwise, without preventive intervention, students could join the ranks of those who fail in school, not because of a SLD, but because their special personal conditions or school biography.

In short, the evaluation is oriented towards the student's response so that make decisions about interventions can be made, which will be marked by the evolution of the learning process. A clear distinction is made between poor performance, due to inadequate teaching process, and low performing related to the individual profile. Poor performance will be considered relevant, only if there is evidence that the student has received adequate instruction and yet an increase in their level of academic performance is not observed [4, 15, 82].

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Chapter 3

LANGUAGE DEVELOPMENT AS A MARKER OF NORMAL BRAIN DEVELOPMENT

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ABSTRACT

Depending on how broadly or narrowly defined, language can include multiple processes which go well beyond speech production and comprehension. Though typical language development is a stepping stone process based on its component parts, such as phonology, morphology, syntax, and pragmatics, it quickly branches into a vehicle for broad communication, including gestures, social and affective orientation toward others, and the facilitation of our learning and thinking skills. Considering its involvement in so much of what we do, language has been proven to be an extremely complex and diffusely distributed function in the human brain. Considerable research shows that individual language process development proceeds in a very predictable manner and parallels specific areas of brain development. Research appears to support a critical period hypothesis during which the brain is maximally sensitive to specific types of language stimulation required for acquisition of skills associated with the next developmental phase. Thus, it seems clear that both genetics and environmental factors are important. Delays in the development of language skills and acquired deviations from normal language functioning can often be diagnostic of a pathological process. Given the great specificity in knowledge regarding the many neuroanatomical structures involved in language, language symptoms can be reasonably well localized in the brain. When language development deviates from the normal timeline, clinical interventions are often essential. Most evidence suggests that earlier intervention is more efficient. There are many creative and evidenced based treatments for language delays; however, depending

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on the severity and duration of the delay, the amount of treatment needed and the prognosis can vary widely. In cases where a delay is extreme there are often other noted cognitive and social deficits. Some speculate that delayed language could even plausibly limit the development of many other cognitive skills. This chapter discusses the more current broad conceptualization of language development and many of the evidence-based treatments. These include behavioral interventions such as Discrete Trial Training, as well as other methods: parent mediated, narrative mediated, social communication interventions, and sensory based interventions.

Language ability is not only universal, but of vast potential, and related to numerous other cognitive and social functions. Although we often tend to think about language primarily as a tool we utilize to communicate with others, it is a far more complex construct that frames our entire human experience, both external and internal. Our sensory input, affective states, and our thoughts are coded in language, so we can process, interpret, and/or store information for future use. As such, language becomes a necessary mediator of our interactions with the self and our environment; it furthers other cognitive abilities and allows us to learn, develop, and adapt to our circumstances. Consequently, depending on how broadly or narrowly defined, language includes multiple processes that go beyond speech and its comprehension. For example, language can subsume communicative gestures (Goldin-Meadow et. al., 2014) and social and affective orientation toward others (Locke, 1997). Thus, we can recognize four broader domains of language processes: perception, reception, production, and behavior; each with its own set of complex mechanisms being subserved and facilitated by corresponding neural circuitry and neuroanatomical structures.

Recent research have extensively broadened our knowledge of the neurobiological basis of language. The localizationist theories contrived to identifying discrete brain structures, with Broca's and Wernicke's areas seen as responsible for most of our language functioning, have been challenged (Lieberman, 2002). Current conceptualizations provide a comprehensive understanding of the complexity of the neuroanatomical support required for various language processes. Moreover, we appreciate that many of the brain structures involved in language functions are interconnected (e.g., the superior temporal lobe connected with the arcuate fasciculus to the inferior frontal areas) and thus interdependent (Pulvermüller & Fadiga, 2010).

Similarly, we are beginning to understand that the courses of language and brain development display equally intertwined experience-dependent relationships. For instance, we commonly accept that certain language functions need to be acquired during a sensitive or critical developmental period (Locke, 1997). Although a dearth of required stimulation can prolong these windows of opportunity, the absence of it can lead to both functional impairment and abnormal neural circuitry and organization (Knudsen, 2004). Thus, a child who has not acquired a sufficiently robust lexicon prior to the activation of their analytic mechanism, which is supported primarily by left hemisphere structures, can experience word learning delays and increased hemispheric symmetry (Locke, 1997). Additionally, while linguistic behaviors are subserved by intricate neural processes, language acquisition itself is a manifestation of brain development occurring to accommodate the expanding repertoire and complexity of those behaviors (Sakai, 2005).

Interdependent relationships can also be observed between language skills and cognitive abilities. Even very early language processes like orientation to human voice, learning utterances, and acquiring a lexicon (Locke, 1997) require the use of attention and short term memory. In turn, acquisition of language skills facilitates the mastery of more advanced cognitive tasks (Goldin-Meadow, 2014) and predicts future academic achievement (Qian, 2002). For example, Qian (2002) found that level of lexical competence predicted performance on reading comprehension assessments. Moreover, language serves as a representational resource necessary for understanding of abstract concepts and development of the theory of mind skills (Clark, 2004). In essence, language development is dependent on specific cognitive abilities, but language is also the code we use to build many other cognitive skills.

Having a better grasp of the intimate connections between language, brain, and cognitive development can have far reaching applications in clinical practice. Language abilities and their precursors are readily observable early in the human development. Thus, very early on, deviations from the typical developmental course of language acquisition can be treated as potential indicators of neurolinguistic issues and brain dysfunction. Timely attention to an atypical language behavior and development can lead to a more immediate discovery of potentially problematic neuroanatomical irregularities. In addition, early interventions can maximize language ability potential as well as school achievement. For example, providers can focus on ensuring a sufficient level of appropriate linguistic stimulation during the critical developmental periods. Even for those children whose language functioning has already been affected by lexical delays or more severe impairments (e.g., Specific Language Impairment disorder; SLI), appreciation of the possible etiology of the dysfunction as well as its implications for neurological processes and academic performance may facilitate selection of more appropriate, comprehensive, and effective treatments.

NEUROANATOMICAL STRUCTURES ASSOCIATED WITH LANGUAGE

Our current understanding of functional anatomy of language is highly developed and has diverse roots, including the scholarly works of many linguists and neuroscientists. Empirical data from a variety of sources, such as the study of individual cases of developmental or acquired language dysfunction, clinical pathology, and brain imaging, supply evidence of the phases of language development and their origins in neuroanatomical structures and processes. A full description of the intricate neuroanatomy of language is far beyond the scope of this chapter. However most basically, clinicians often simply dichotomize language by discussing the anterior language area, involving Broca's area, and the oromotor area and the posterior language areas, including Wernicke's area and the primary auditory cortex.

Broca's Area

Broca's area, located in the inferior posterior frontal lobe, organizes the output of language. An expressive language deficit is recognized as the most common language impairment. A deficit in Broca's area tends to reduce speech to nouns and verbs only,

eliminating articles, and adverbs (Kean, 1977). Difficulty with repetition and naming is also evident, although object naming can be aided by prompting with sounds or context (Kohn & Goodglass, 1985). It should be noted that when an individual has a lesion in Broca's area, comprehension can be perfectly intact (Caramazza, Capitani, Rey, & Berndt, 2001). This often produces extreme frustration at their own inability to convey what they are thinking.

Wernicke's Area

Wernicke's area, positioned in the posterior section of the superior temporal gyrus, is involved in deciphering meaning from language. Children will often produce fluent and sometimes hyperfluent language when a deficit is found in this neuroanatomical structure; however, their speech is generally unintelligible and filled with paraphasia's that are semantic in nature (Ellis, Miller, & Sin, 1983). For example, they will substitute words for ones that they intend to speak (i.e., desk for table, blue for red, leg for hair) and will exhibit comprehension impairments in their own language and that of others.

Interestingly their articulation and diction may be very good even though the content can be comprehended as nonsensical by the listener (Ellis, Miller, & Sin, 1983). The result is often referred to as "word salad."

Many sources of evidence suggest that comprehension or the phonological stages of spoken word recognition are supported by neural systems in the superior temporal gyrus (STG) and superior temporal sulcus (STS). In neuroimaging studies, listening to speech activates the superior temporal lobe bilaterally and largely symmetrically (Binder et. al., 2000). Anterior temporal lobe (ATL) regions have also been implicated both in lexical-semantic and sentence-level processing (syntactic and/or semantic integration processes). An intricate interplay of all of these neural resources then facilitates the development of language as it unfolds in largely predictable stages.

TYPICAL LANGUAGE DEVELOPMENT

Infancy

Although a quite complex construct, language is simply defined as a form of communication which is based on a system of symbols. Most linguistics separate language into five systems of rules: phonology, morphology, syntax, semantics, and pragmatics. Interestingly, no matter what culture you are from and what language you speak, infants from all over the world follow a similar path of these systems in language development. According to some researchers, vocal learning begins in-utero with fetal exposure to prosody and affective qualities of the maternal voice (Locke, 1997; Mame, Friederici, Christophe, & Wormke, 2009). In their first few months, newborns are strongly oriented toward human face and voice, thus learning superficial voice characteristic, which assists them with acquiring first stereotyped utterances around the age of 5 – 7 months (Locke, 1997). Exposure to parental expressions, both verbal and nonverbal, continues to be important while infants learn to use communicative gestures and begin their lexical learning (Goldin-Meadow, 2014;

Locke, 1997). Perceiving and acquiring socially relevant cognitive linguistic operations, such as taking vocal turns with a care giver, gesturing communicatively, and mimicking ambient speech patterns, aids in this introduction to communication and word learning (Locke, 1997; Tsao, Liu, & Kuhl, 2004). Moreover, in the second part of the infant's first year he/she is able to recognize interruptions in the speech stream, thus gaining the means to break down speech into units based on its melodic qualities (Locke, 1997). During this time, the process of neural commitment occurs, which solidifies the infants' recognition and preference for the patterns and variations of their mother tongue (Kuhl, 2004). More specifically, Kuhl (1993, 2000) discovered that from birth to age 6 months, infants are hearing and learning all language sounds of the world. However, from 6 months on, infants begin to perceive the changes in their native language, and gradually lose the ability to recognize sounds from other languages. This change corresponds to neuronal maturational changes. Before neurons become highly specialized they have significant neuroplasticity referred to as equipotentiality. After a certain amount of specific stimulation (exposure to the primary language) they undergo some long-term changes. They become fine-tuned to primary language phonemes.

While infants make strides in developing their perception and reception of language, progress in their ability to express language is also being made. The initial stage of expressive language development is termed "babbling." Babbling describes the sounds babies produce to attract the attention of their parents or caregivers. These sounds can also take on the form of crying, cooing, and gestures. Even children with hearing impairments will make sounds vocally at their parents during the infancy stages (Bloom, 1998; Goldin-Meadow, 2006) suggesting a unified language capacity in all children.

From 8 to 12 months, infants begin to understand words. According to Menyuk, Liebergott, and Schultz (1995) when children reach their first birthday, they typically understand about 50 words. As such, receptive vocabulary far exceeds expressive vocabulary. Between 10 and 15 months, a typical milestone for an infant to utter their first spoken word takes place. In fact, this time frame is so genetically driven that significant delays in first word acquisition may suggest brain dysfunction and the possibility of some longer term issues. Additionally, this beginning of speech corresponds to growth of the left hemisphere and helps facilitate stimulation to the language areas of the brain. A child's first words are typically naming something important to them, such as "momma", "dada", "dog", "ball", or "cookie." These single words often have multiple meanings, such as "I want the ball" or "That is a ball." Once this first word is spoken, a child's vocabulary takes off – with the average 18 month-old being able to express approximately 50 and the average 2 year-old being able to express over 200 words.

Toddler/Preschool

By the time the child reaches 2 years of age, they are typically beginning to use two-word utterances. At this stage, a child's language appears to be telegraphic; short words without grammar markers (e.g., "see dog" and "give ice cream"). These first words and phrases are formulaic or holistic in nature and not subject to further analysis (Locke, 1997), yet at the same time phonetic learning is already taking place with the child being able to discriminate between phonemes more precisely than he/she will ever be able to do at later ages (Kuhl, 2004). After a certain amount of language exposure, the primary auditory cortex neurons

become highly specialized in decoding and discriminating language and nuisance. Unfortunately this occurs at the expense of the ability to proficiently hear and process phonemes of other languages. The inherent developmental neuroplasticity causes the relevant neurons to become maximally sensitive to the stimuli they are receiving, which are the sounds of the child's native language. If exposed to a second language before this process is complete the individual will develop a natural-like ability for both languages.

Phonetic learning strategies are eventually augmented and replaced by computational learning, which can help the child segment words into syllables (Kuhl, 2004; Locke, 1997). From this stage, children move quickly into the three, four, and five word sentences; taking them to the years of early elementary school. In addition, preschool children are able to analyze the structure of speech and begin to acquire grammatical ability, which provides the tools needed for morphology, phonology, syntax, and lexicon mastery (Locke, 1997). Equipped with these new skills, they experiences a burst in word learning and integration of this new knowledge (Locke, 1997). During this time, children are also exposed to rhymes, poems, songs, and silly sayings. This is the pre-literacy period where interaction with print-materials heightens and preschoolers begin to learn morphological rules such as plurals, present and past tense, prepositions, displacement, articles, and organization of sounds. It is typically during these years that language or speech difficulties become evident. In fact, children who do not have many print-related interactions during the preschool years have been shown to take longer developing literacy (Antonaci & O'Callaghan, 2006; Pressley, 2003).

Elementary School

By elementary school age (approximately 6 years old), children's vocabulary has reached a range of 8000 to 14000 words (Bloom, 2002). This translates into learning 5-8 new words a day from the ages of 1 to 6. When children enter school, the rate of lexical acquisition increases even further to an astonishing 22 new words per day. Of note, early vocabulary growth has been correlated with the quantity of speech that parents direct at their children (Huttenlocker, Haight, Bruk, Seltzer, & Lyons., 1991; Goldin-Meadow, 2014). Additionally, vocabulary, grammar, metalinguistic awareness, and pragmatics all greatly improve during the elementary years.

Reading is another language skill that begins to develop and strengthen when children are attending elementary school. Jeanne Chall (1979) devised a model which divides the development of reading skills into five stages from birth all the way through high school. Although the ages are approximate, they outline the developmental changes which occur when a child learns to read. While a great deal of discussion in the field focuses on identifying the dominant approach, there are two basic schools of thoughts on learning to read: whole-language and basic-skills-and-phonics. The whole-language approach asserts that reading instruction should parallel a child's natural language. Thus, children's reading materials should be whole so that the focus can be on meaning and comprehension (Goodman, 1986). Alternatively, the *basic-skills-and-phonics approach* asserts that reading should be taught by phonics and the rules for translating written symbols into sounds (Cunningham, 2005; Lane & Pullen, 2004). Although the debate over which approach is better remains, there is strong evidence that both together may serve the learner best (Durkin,

2004; Fox & Hull, 2002; Silva & Martins, 2003; Temple, Ogle, Crawford, & Freppon, 2005). Nonetheless, stressing both concepts equally in pedagogical methodologies does not diminish the importance of phonics in language development. As children mature, their social interactions increase, and the exposure to language and communication expands into new concepts and environments (Kuhl, 2004).

The cross-culturally normalized time-dependent phases of language development suggest that many of the developmental processes are likely genetically determined. Indeed, evidence from twin studies supports moderate influence of genetic factors on both language ability and disability for multiple skills areas (e.g., articulation, phonology, grammar, vocabulary, and verbal memory; Kovas et al., 2005; Trouton, Spinath, & Plomin, 2002). Conversely, research about critical periods in language development (Locke, 1997) indicates that many of the involved processes are not only genetically driven, but also experience-dependent and therefore co-determined by the degree of available environmental stimulation.

DISRUPTION OF LANGUAGE DEVELOPMENT

While the above pattern and types of learning describe the phases of typical language development, disruption in that process may lead to delays in acquiring specific language skills and eventually specific language impairments. Locke (1997) suggested that delays in analytical and computational processes which enable the discovery of regularities and thus promote phonology, morphology, and syntax can delay lexical learning. The neuroanatomical adaptations to such delays involve an increase in hemispheric symmetry by the recruitment of homologous right hemisphere structures. While atypically developing brain structures may fulfill a compensatory function, they may do so in a less than optimal way (Locke, 1997). The observation that infants and toddlers who undergo complete removal of the left hemisphere acquire or recover near-normal language suggests that the right hemisphere can take over most of the language functions of the left hemisphere provided the transfer of function happens early enough (Byrne and Gates, 1987), while the neurons still have a high level of neuroplasticity. Considerable clinical literature suggests that in these cases there is also a disruption in typical right hemisphere functions since that brain tissue has had to assume language functions at the expense of other functions.

Yet, children with speech and language impairments do not often show gross abnormalities when inspecting the brain (Snowling & Hayiou-Thomas, 2010). Nevertheless, some brain-based differences have been identified including anatomical differences in the perisylvian regions, such as asymmetry of plana temporal (right > left asymmetry; Leonard et al., 2002) and reduced or reversed asymmetry of Broca's area (De Fosse et al., 2004; Gauger, Lombardino, & Leonard, 1997). Further, language impairment has been associated with more widespread neural differences across frontal, temporal, parietal, and subcortical regions (Bishop & Snowling, 2004) and total cerebral volume reduction (Leonard et al., 2002; Trauner, Wulfeck, Tallal, & Hasselink, 2000) adding support to the theory that language is more complex than just a few neuroanatomical structures in the left hemisphere.

LANGUAGE IMPAIRMENTS AND DEFICITS

Specific Language Impairment Disorder (SLI)

Regardless of the cause of the delays, the resulting impairments often fall under one of the following diagnoses: SLI and Speech Sound Disorder (SSD). SLI is a neurodevelopmental disorder characterized by delays or significant deficits in language development in the absence of general cognitive problems, hearing impairments, psychiatric problems, or overt related neurological damage (Peterson & McGrath, 2009; Snowling & Hayiou-Thomas, 2010). Often, the classification occurs using the IQ discrepancy model. However, given the fundamental problem of IQ based discrepancies, this means that many children will have language deficits that do not specifically meet the definition, even if their language acquisition is far below their age and/or interfering with their daily functioning. According to the classification of language impairment, the prevalence rates range between 3% to 8% (Tomblin et. al., 1997).

Speech Sound Disorder (SSD)

Unlike SLI, SSD is classified by age, rather than the IQ discrepancy model which may be more practical in regard to identification and classification. Children are considered to meet the diagnosis of SSD if they substitute or omit sounds from words more than their same-age peers; especially, if their speech production errors interfere with their intelligibility (Peterson & McGrath, 2009). The prevalence rate for SSD is lower at 3.8% (Beitchman, Nair, Clegg, & Patel, 1986). Both disorders have been linked to genetics; however, there appears to be a strong environmental factor involving both home language and the literacy environment. Children with these language deficits may either have a family history of language impairments, contributing environmental or familial issues, an acquired brain dysfunction, or some combination of these factors. In fact, research has shown that children who enter elementary school with a small vocabulary are at risk of developing reading deficits (Berko & Gleason, 2005). Similarly, when children are not exposed to good phonic instruction during the early elementary years, they are less likely to develop appropriate decoding skills; resulting in spending more time sounding words out, than comprehending what they read (Stanovich, 1994).

For those who do not develop language in a typical fashion, the Critical Period Hypothesis (CPH; Lenneberg, 1967; Penfield & Roberts, 1959) for language development becomes very important. According to the CPH, there are constraints in the acquisition of first language. Specifically, if language is not acquired in a time expected manner, some aspects of language may never be optimally achieved. The CPH has garnered substantial empirical support, especially in the study of abnormal development, for instance with language acquisition in Down syndrome (Lenneberg, 1967) and autism (Moore & Sheik, 1971). However, given that language can still develop, just not as ideally as if acquired in the requisite time frame, some researchers argue that these periods of essential learning and exposure would be more accurately described as sensitive rather than critical (Bench, 1971; Redmond, 1993).

Given this differentiation of terminology, two versions of the CPH have emerged: the rigid version and the flexible version (Alghizzi, 2014; Redmond, 1993) also referred to as a strong and weak version. Those that subscribe to the rigid version believe that if an individual was unable to acquire primary language during the critical period, a functional level of language would never be attained, no matter what type of intervention or language exposure occurs (Alghizzi, 2014; Redmond, 1993; Seigler, 1981; Singleton, 1989). Supporters of the flexible version theorize that while the emergence of language should start during the critical period, language learning can still occur even after the critical period is closed, even though the affected individuals will likely not achieve the same language level as typically developing peers (Alghizzi, 2014; Redmond, 1993; Scovel, 1988). Regardless of one's position on the flexible version or rigid version of the CPH, there continues to be precedence for early intensive interventions for children with speech-language impairments, developmental disabilities, and autism spectrum disorders. Some clinicians prefer to consider a moderated conceptualization of the CPH. Specifically, they purport that treatments for language delays require an increasing amount of time and perhaps more diverse planning as the time post critical period grows.

Although acquired (ABI) or traumatic brain injury (TBI) is not the focus of this chapter, language development and brain dysfunction cannot be discussed without a brief notation regarding aphasia's resulting from brain injury. Classification of aphasia's remains a common debate in the field of neuropsychology. Among those clinicians and researchers who have been willing to categorize language deficits, most agree to either a two-term aphasia classification (i.e., expressive and receptive) or a six-term classification (i.e., Broca's, Wernicke's, Conduction, Anomic, Transcortical Motor, and Transcortical Sensory). The six-term classification developed from the work of Geschwind (1970) and Goodglass and Kaplan (1972) and is often referred to as the Boston classification. The Boston classification has increased in popularity due to its related aspects to lesions at particular sites on the cerebral cortex lending it diagnostic validity (Beaumont, 2008).

INTERVENTIONS

Spoken language disorders impact children with a variety of issues, including intellectual disability, global developmental delay, hearing or other sensory impairment, motor dysfunction, or a variety of other mental disorders or medical conditions. A range of treatment options is available for language disorders, such as behavioral interventions, language interventions, narrative interventions, parent-training interventions, social skills and social communication interventions, relationship-based interventions, and sensory based interventions. Empirical support for these treatments is variable depending on which intervention is utilized. In many of the individuals receiving language interventions, it is clear that other aspects of cognition and socialization have also been affected. Though speculative, some clinicians suspect that the delayed language, if significant, is limiting the development of other abilities, such as social skills. Moreover, when verbal language development lags there is certainly the possibility for the increase in other perhaps far less adaptive ways of communication.

There are significant precedents for early intensive interventions for children with speech-language impairments, developmental disabilities, and autism spectrum disorders. Whether interventions are behaviorally based or provided by a speech-language pathologist, the most successfully used interventions share many commonalities. For example, they tend to involve the whole family (Koegel, 2000; Koegel, Koegel, Frea & Smith, 1995; Robbins, 2009). Due to the fact that parents spend more time with their children during the days, evenings, and weekends, they are able to provide more consistent and time-intensive interventions for their children (Koegel et al., 1995). Furthermore, a family-centered approach allows for the family to be involved in multiple aspects of care and treatment (Crais, Poston Roy & Free, 2006). While incorporating family members is essential in the success of any early intervention program, clinicians should be mindful of how placing additional demands on the family may increase parental stress (Koegel, 2000). Research indicates that high levels of parental stress actually minimize or undermine the effectiveness of early interventions (Osborne, McHugh, Saunders, & Reed, 2007). Conversely, by being responsive to family needs in creating an intervention program, parental stress should, in fact, decrease (Koegel, 2000; Moes, 1995). Thus, family-based interventions should be designed to fit into the families' specific lifestyles and routines, as opposed to requiring parents to carve out time to work one-on-one with their child (Koegel, 2000). Programs that allow teaching to occur on a continual basis throughout the day result in even more gains in the frequency of communication by the child (Koegel, 2000; Koegel, Bimbela & Schreibman, 1996; Schreibman, Kaneko & Koegel, 1991).

Another hallmark of effective therapies is cultural sensitivity. With the change in the demographic composition of the United States over the past decades, professionals are currently working with children from increasingly more diverse cultures (Hanson & Lynch, 2004). As a result, programs incorporating family should be culturally and linguistically sensitive and responsive (Koegel, 2000; Robbins, 2009). In addition, many successful interventions include coordinated efforts of multiple stakeholders (i.e., service providers; Robbins, 2009), as well as trained volunteers and consultants (Koegel, Koegel, & Carter, 1999) and care-givers (Koegel & Koegel, 2006; Roberts & Kaiser, 2011). Effective treatment programs also tend to promote generalization to the natural environment and emphasize best practices.

Behavioral Interventions

All behavioral interventions have the goal of decreasing disruptive or problem behaviors while providing functional and adaptive replacement behaviors. Common behavioral interventions include Discrete Trial Training (DTT; Bogin, Sullivan, Rogers, & Stabel, 2010), Functional Communication Training (FCT; Carr & Durand, 1985), Lovaas model (Lovaas, 1987), Milieu therapy, and Pivotal Response Treatment (PRT; Koegel & Koegel, 2006).

DTT, the Lovaas model, and the University of California, Los Angeles (UCLA) Young Autism Project method are often used in conjunction with one another and considered under the larger term of Applied Behavioral Analysis (ABA). In a review of behavioral interventions conducted by the Agency for Healthcare Research and Quality (AHRQ; 2014), results of 25 studies of Early Intensive Behavioral Interventions (EIBI) utilized with children diagnosed with autism spectrum disorders were reviewed. Results indicated a positive effect

of EIBI ABA-based interventions on language and communication skills (AHRQ, 2014). Although the impact on the specific domain language was variable in these studies (expressive vs receptive), there is evidence of an overall positive effect (AHRQ, 2014). Furthermore, many of these studies indicated that ABA based treatments positively influenced social skills (AHRQ, 2014). Reviews of the literature found support for the success of the Lovaas model in improving many of the core symptoms associated with autism and autism spectrum disorders; however, many of the studies have inconsistent methods, few participants, or relatively little follow up (Ospina et. al., 2008). Language and communication, particularly in social contexts, are often reciprocal in their developmental stimulation. In the context of Autism, individuals are not practicing their language socially and treatment, no matter how efficacious, cannot take the place of the thousands of hours typical developing children spend in social conversation and thinking.

Functional Communication Training (FCT) is a behavioral intervention first reported by Carr and Durand (1985). This intervention proposes that problem behaviors can be eliminated through extinction; through behavioral principles, alternative and more appropriate forms of communication are taught as replacement behaviors (Carr & Durand, 1985). Based on their report, Carr and Durand successfully increased communication, which in turn assisted in reducing problem behaviors (Carr & Durand, 1985). Other empirical studies have provided support for FCT as successful in reducing challenging and problem behaviors, while increasing language (Durand, 1990; Durand & Merges, 2001).

Milieu therapy and training incorporates naturalistic interventions to address language. Interventions included in this area include milieu teaching (MT; Hancock & Kaiser, 2002), prelinguistic milieu teaching (PMT; Yoder & Warrant, 1998), and enhanced milieu teaching (EMT; Hancock & Kaiser, 2002). These methods are incorporated into the natural environment in order to present communication and language opportunities throughout the day, as opposed to occurring only during designated therapeutic intervention time. There is evidence that utilization of naturalistic sign and language interventions improves communication (Fey, Yoder, Warren, & Bredin-Oja, 2013; Wright et al., 2013), though support is limited.

Pivotal Response Training (Koegel & Koegel, 2006) is designed to increase functional language during play-based, child-initiated behavioral intervention. As opposed to other ABA based interventions, PRT focuses on reinforcement that is natural and occurs after a meaningful attempt (Koegel & Koegel, 2006). PRT incorporates several pivotal areas to address behaviors. Initially, research focused on responsivity to multiple cues, increasing motivation, and addressing self-management (Koegel, Koegel, & Harrower, 1999). By reinforcing attempts of utilizing language (Koegel, O'Dell, & Dunlap, 1988) and using natural reinforcers (Koegl & Williams, 1980) increases in functional language are thought to occur. There is evidence to support that PRT positively impacts communication and social interactions (Koegel, Koegel, & Harrower, 1999; Koegel, Koegel, & Surratt, 1992; Koegel, O'Dell & Koegel, 1987; Ospina et al., 2008), as well as improvements in untargeted areas (Koegel, Koegel, & McNerney, 2001).

Language Interventions

According to American Speech-Language-Hearing Association (ASHA; “Spoken Language Disorders,” 2015), language interventions include clinician-oriented, child-oriented, and hybrid approaches. While gaps exist in the literature regarding the effectiveness of language interventions (Cirrin & Gillam, 2008; Kamhi, 2014; Law, Garrett, & Nye, 2004; Wallach, 2014), the principles and areas addressed by them are consistent (Fey, Long, & Finestack, 2003; Kamhi, 2014). In *clinician-oriented approaches*, the clinician chooses the treatment goals and utilizes operant principles to teach language (“Spoken Language Disorders,” 2015). In *child-oriented* approaches, the clinician incorporates language goals into child-led activities that occur in a more natural environment (“Spoken Language Disorders,” 2015). In the *hybrid approaches*, the clinician utilizes naturalistic activities to promote language opportunities (“Spoken Language Disorders,” 2015).

Regardless of age, language interventions focus on phonology, morphology and syntax, and pragmatics. In preschool age children, phonology interventions address intelligibility, increase phonological awareness skills (e.g., rhyming, blending, segmenting, deletion, etc.), build vocabulary to approach the vocabulary of language-typical peers, and increase understanding of semantic relationships. Morphology and syntax interventions in preschool age children examine how to facilitate acquisition of morphemes, increase sentence length and sentence complexity, and use varying sentence type. Pragmatic interventions strive to increase imaginative play skills that utilize language, improving conversational skills, and developing story-telling and narrative skills.

Interventions for school age children target skills necessary for success in the academic environment. The same areas are addressed as in preschool age children with addition of intervention goals targeting the skills needed for academic success. Phonological interventions aim to improve phonological awareness skills. Semantic interventions emphasize knowledge and depth of vocabulary and understanding and recognizing ambiguities in language. Additionally, they facilitate comprehension and address paraphrasing as opposed to verbatim repetition. According to the ASHA, morphology and syntax interventions focus on increasing and advancing morphology; analyzing complex words; formulating compound sentence structures; and utilizing rules of grammar to correct errors (“Spoken Language Disorders,” 2015). Pragmatic interventions work to incorporate politeness; increase appropriate contributions to classroom and social discourse; and teach matching language to situations, while recognizing what not to say (“Spoken Language Disorders,” 2015).

Parent-Mediated Interventions

These therapies require the direct involvement of parents who themselves implement individualized interventions. Many of these interventions are play-based in nature, requiring parents to pay attention to their child’s attention and activity during play (Siller & Sigman, 2008; Siller, Hutman, & Sigman, 2013). Reviews of studies examining parent training found support for language improvement (AHRQ, 2014; Roberts & Kaiser, 2011); especially when parents are responsive to child attention during play (Siller & Sigman, 2008, Siller, Hutman, & Sigman, 2013). However, specific interventions employed in the reviewed studies were

inconsistent across the studies reviewed, which indicates the need for replication of results when examining consistent parent-mediated interventions (AHRQ, 2014).

Social Skills and Social Communication Interventions

Approaches that utilize social skills and social communication aim to increase social skills and promote social competence (Cook, Gresham, Kern, Barreras, Thornton, & Crews, 2008). The empirical support for these approaches is limited (AHRQ, 2014), though successful strategies include a combination of social modeling, coaching, and encouraging practice (Cumming, Strnadová, & Dowse, 2014; Gresham, 2002).

Relationship-Based Interventions

Floortime (Greenspan, Weider & Simons, 1998) is a relationship-based intervention designed to support the parent-child relationship by encouraging the child to interact with parents through play. The Developmental, Individual Difference, Relationship-based (DIR) Floortime Model focuses on addressing individual differences by examining how a child processes and understands new experiences, reacts to sound, comprehends visual experience, plans actions, and responds and handles relationships (Greenspan, 2006). Little empirical support exists for Floortime (Mesibov & Shea, 2011).

Sensory-Based Interventions

Interventions based on principles of sensory integration theory to treat sensory dysfunction fall in this category, including Auditory Integration Therapy (AIT), otherwise known as the Bérard method (Bérard & Brockett, 2011). AIT utilizes middle ear muscles and auditory nervous system to retrain a disorganized auditory system, regardless of hearing ability (Bérard & Brockett, 2011). Empirical support is limited for the effectiveness of AIT (Al-Ayadhi, Al-Dress, & Al-Arfaj, 2013; van der Meer, Sigafos, O'Reilly, & Lancioni, 2011).

In summary, effective speech interventions should be empirically supported, and many of those listed above have considerable research backing (Bernstein Ratner, 2006; Cirrin & Gillam, 2008; Gillam & Gillam, 2006; Kamhi, 2006, 2011, 2014; Wallach, 2014). Furthermore, effective speech interventions should aim for children to become actively engaged in learning (Wallach, 2014), while assisting them in increasing communication strategies (Roth & Worthington, 2015). In order to attain active engagement of the student, speech interventions need to be interactive and dynamic (Roth & Worthington, 2015). The most successful speech interventions are those that address the specific and individual deficits of the child (Kamhi, 2014; Roth & Worthington, 2015; Wallach, 2014). Although interventions may start very specific and mechanistic, the ideal is that interventions evolve into more naturalist communication. Regardless of age, all therapies should also address all of the skill areas in structural language, including phonology, semantics, morphology, and syntax, as well as the pragmatic use of language (Weismer, 2014). Oftentimes, interventions

utilized to address language and communications skills have variable results regarding generalization to the natural environment (Kamhi, 2014). Thus, the most successful interventions tend to be the ones that promote such a generalization. Many speech and language interventions and behavioral interventions attempt to address the issue of generalizing the intervention gains by taking place in the natural environment, as in child-oriented language approaches (“Spoken Language,” 2015), and focusing on pivotal areas to increase improvements in untargeted areas (Koegel & Koegel, 2006; Koegel, Koegel, & Harrower, 1999). Attempts continue to close gaps that are present in the literature regarding speech and language interventions (Kamhi, 2014; Wallach, 2014). Expanding the empirical evidence foundation for language deficit treatments is imperative for the continued improvement of children’s ability to acquire language, regardless of the reason for their deficit.

CONCLUSION

Language is a genetically driven and environmentally dependent skill that helps facilitate many other aspects of brain functioning. It comprises a set of skills that are distributed throughout the left hemisphere, but largely in the perisylvian area. Human language development is so well researched that deviations in typical developmental patterns can be very predictive of specific brain dysfunction. When language skills become impaired, early and specific treatment has been shown to effectively treat many language impairments. Language assessment and treatments continue to evolve.

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Chapter 4

ATYPICAL LANGUAGE DEVELOPMENT AND PSYCHOPATHOLOGICAL RISK: A TYPICAL NEUROPSYCHIATRIC PROBLEM?

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ABSTRACT

Cohen and coworkers were the first to demonstrate the presence of significant difficulties in language development and/or of the evolutive trajectory of this function in subjects evaluated in their adolescence for serious psychopathology. Subsequent longitudinal studies showed that children with language and communication disorders are at risk of having social, behavioral and emotional difficulties in adolescence and adult age.

A number of different mechanisms can be invoked to explain this association. First, language is a powerful tool for processing difficulties both in the relational contest and related to the so-called “social problem solving”. Others believe that the defect in mentalization associated with a frailty of executive functions might produce a decline of language skills in individuals predisposed to develop a psychopathological disorder. Still others point out that it is possible that the deficits in language make psychopathological problems that otherwise would have remained sub-threshold more evident and serious, as they reduce the relational exchanges. Finally, it has been hypothesized that there may be other mechanisms common to both the difficulty of the language and the psychopathological disorders, in terms of both genetic aspects and neurocognitive functions (e.g., working memory deficits).

In any case, it is evident that an atypical functioning of a given subject in the field of language is a relevant factor for the treatment, especially when the treatment method largely uses the word to induce a change in mental functioning (as in most psychotherapies).

INTRODUCTION

Language impairments in their various forms affect 3–7% of the population (Norbury & Paul, 2013). In Italy, a difficulty in acquiring age-adequate language skills is the most frequent reason for a neuropsychiatric consultation in pre-schoolers, although at least half of these children present also other significant symptoms (in terms of psychomotor development and/or of emotional and behavioral functioning).

Despite their relevance for children wellbeing and their cost for the health system, language impairments receive very little public attention, research interest or research funding (Bishop, 2010). This is even more surprising given that language is central to our everyday lives; we use language to learn and to work, to communicate with our friends and loved ones and to access leisure activities such as reading and television. Additionally, language is a fantastic resource for problem solving, negotiating and managing our thoughts, feelings and behavior.

Longitudinal studies of community and speech-language clinic samples have shown that language problems identified early in childhood not rarely persist into adolescence (e.g., Beitchman et al., 1996; Conti-Ramsden & Botting, 2008; Voci et al., 2006). Moreover, adolescents with a history of language impairment often experience social stress reflected in poorer quality of friendships, social relationships, and pragmatic communication skills (e.g., Durkin & Conti-Ramsden, 2007; Wadman et al., 2011) and are especially prone to emotional and social difficulties (e.g., St. Clair et al., 2011; Voci et al., 2006). Furthermore, youth diagnosed with language impairment show higher rates of ADHD, anxiety, depression, conduct disorder, and delinquency (Cohen et al., 1998; Brownlie et al., 2004; Snowling et al., 2006).

One of the most significant studies provides information on the Danish population: an atypical development of language skills was a strong predictor of Neurodevelopmental Disorders (OR: 5.9), but also of children and adolescent psychiatric disorders (OR: 3.3) (Skovgard, 2010).

While core elements of structural language develop in childhood, certain aspects of language show marked development during adolescence. These include verbal reasoning, understanding and using higher order language, and language required for social interactions.

Cohen et al. assessed 144 adolescents referred to mental health services and 186 non-referred peers. Overall, the referred group had significantly lower scores on standardized tests of structural and pragmatic language abilities (which they named higher order language abilities), with 45% of the group meeting criteria for language impairment. Lower non-verbal IQ, poorer working memory, and lower levels of maternal education increased risk for language impairment in this group (Cohen et al., 2013).

During the transition to adolescence, demands on language grow in complexity and abstractness (Power et al., 2001; Nippold & Taylor, 2002). Lazar and colleagues (Lazar et al., 1989) showed that utterances by classroom teachers that contain at least one type of figurative language increased from 5% in kindergarten (age 5–6 years) to 20% in grade 8 (age 13–14 years). While young children are capable of making inferences, they typically do not do so unless prompted.

Thus, problems with higher order language may not be evident in younger samples, even among children with diagnosed language impairment. A case in point are two studies by Bishop and Edmundson (1987) that examined children's language at four important

developmental transition points. Among children diagnosed as having a structural language impairment at the age of 4 years, 66% no longer met criterion for language impairment at 5½ years. Nevertheless, in a follow-up study into adolescence, even the good outcome group showed subtle but significant deficits compared with controls on tasks tapping verbal short-term memory, and phonological skills. These children also showed problems with inferential reading comprehension, a skill that requires higher order language abilities (Stothard et al., 1998; Snowling et al., 2000). Such problems clearly occurred in adolescence even when more basic structural language impairments seem to have resolved.

Higher order language also has both direct and indirect effects on psychosocial development. In terms of direct effects, language is a means of analysis and self-control by way of both internal language and discussions with others (e.g., Bishop, 2003). Moreover, through coherent and organized discussions of feelings, thoughts and ideas, adolescents gain a sense of both self-expression and self-control. In terms of indirect effects, adolescents with higher order language problems who struggle to keep up with increasingly demanding schoolwork and who encounter difficulties in relationships often suffer in terms of their feelings of self-efficacy and self-esteem (Levine, 1999). In addition, they may become more isolated to hide difficulties from peers and adopt ineffective defenses to deal with these problems. Thus, it is likely that adolescents who do not have the age appropriate higher order language skills to succeed in school, present and flexibly discuss a point of view and negotiate outcomes, and engage in social repartee with peers and adults will be at a disadvantage.

Clinic-referred youth in this study are three times (45%) more likely than comparison youth (15%) to meet criterion for a Higher Order Language Impairment. Research has shown that youth presenting for assessment and treatment of mental health problems often are described as purposefully noncompliant to directions, oppositional, lazy, and lacking interest in school (Cohen et al., 1998). These behaviors typically are interpreted as willful rather than being linked to inadequate communication and comprehension skills and working memory problems. For instance, clinic referred youth may fail to complete assignments or projects, or answer examination questions correctly because it is hard for them to process and maintain in working memory a chain of instructions or information. They also may have difficulty understanding content material or what is expected of them. In spite of these well established associations, language impairment is often overlooked in the assessment of children and youth presenting for mental health services (e.g., Toppelberg & Shapiro, 2000; Cohen et al., 1998).

In this context, it is also important to highlight that problems with higher order language were not limited to the clinic-referred sample but also observed, albeit less frequently, in the comparison group. Moreover, the correlates of higher order language impairment in the two groups are similar. The high school curriculum and teachers need to be sensitive to the higher order language needs of adolescents, which may be overlooked or misinterpreted. Clearly there are many youth who would benefit from help in understanding the expectations of assignments and becoming more skilled at interpreting literature and discourse where figurative language is embedded. However, there are fewer services for language impairment or language related learning disabilities for this age group in high schools than for younger preschool children or children in the elementary grades (e.g., Dockrell et al., 2006).

These findings resonate with earlier seminal work by the research group lead by Cohen, demonstrating high proportions of children referred to child and mental health services for

emotional and behavioral problems experienced concomitant language impairments (Cohen et al., 1998). These authors have shown that a sizeable proportion of children referred for assessment and treatment of social and/or emotional problems have a structural language impairment with estimates ranging from 50% to 80%. Moreover, for many children language impairment remains unsuspected unless a routine examination is done (Cohen et al., 1998).

The findings are also in accord with longitudinal studies of children with identified language and communication impairments, who are at elevated risk for social, emotional and behavioral difficulties in adolescence and adulthood (Snowling et al., 2006; St Clair et al., 2011).

MODELS TO UNDERSTAND THE LANGUAGE – PSYCHOPATHOLOGY CONNECTION

Considered separately, clinically significant behavior problems are estimated to affect 10% to 15% of preschool children (Campbell, 1995). Other estimates suggest that nearly 17% of preschool children meet criteria for oppositional defiant disorder and that 20% experience moderate levels of externalizing symptoms (Pianta & Caldwell, 1990; Lavigne et al., 1996).

Although some children evidence decreases in externalizing behaviors over time, nearly 20% of children with initially moderate or high levels of aggressive behavior follow a fairly stable course over time, with negative outcomes (e.g., social maladjustment, academic problems) apparent at 12 years of age (Campbell et al., 2006).

Externalizing behavior problems are associated with additional maladaptive correlates, including peer rejection, social skill deficits, academic difficulties, and high rates of expulsion and suspension from preschool and day care (Qi & Kaiser, 2003; Gilliam & Shahar, 2006).

Estimates of language delay range from 12.5% to 15% among older infants and toddlers, and 18% to 28% among 30–39-month-olds (Horwitz et al., 2003). Children with early language difficulties experience long-term adverse outcomes, including demoralization, higher levels of grade retention, and lowered academic performance, even subsequent to the resolution of their language problems (Catts, 1993; Benner et al., 2002; Snowling et al., 2006; Harrison et al., 2009).

Given that both language difficulties and externalizing behaviors are associated with negative correlates and sequelae, examining processes that may underlie co-occurring linguistic and behavioral difficulties could inform etiological and intervention models at a time when these processes are amenable to intervention, and prior to the development of additional sequelae.

Notably, two studies found that externalizing behavior problems were not reliably correlated with expressive language delay until after 30 months of age (Horwitz et al., 2003; Tervo, 2007). During this developmental period, language difficulties (receptive and expressive) are most likely associated with deficits in social competence, as opposed to externalizing behaviors (Caulfield et al., 1991; Irwin et al., 2002; Horwitz et al., 2003; Ross & Weinberg, 2006; Tervo, 2007). Thus, given that decreased social competence is a common correlate of language delay among children from birth to age three, limited social–linguistic opportunities resulting in diminished social competence may mediate the pathway between early language difficulties and later behavior problems.

The development of linguistic competencies is critical for early school success. School entry represents a significant developmental milestone for preschoolers, who must form new relationships outside of the family, adjust to the expectations of teachers and classroom routines, follow directions and interact with peers during learning and play (Olson & Hoza, 1993; Mendez et al., 2002). Thus, among the most important tasks for preschoolers is the development of self-regulatory strategies and positive peer relations (Olson & Hoza, 1993; Liebermann et al., 2007). Typically developing children's linguistic and communicative development forms the basis for meta-communication about play, planning for play, and the execution of complex social pretend play (Howes & Lee, 2006). Between 36 months and 48 months of age, preschoolers' development of self-regulatory systems is characterized by dramatic improvements in error detection and ability to inhibit actions, which coincides with the development of frontal brain structures that occurs during this developmental period (Jones et al., 2003).

One consistent research finding is that preschool-aged children with language difficulties continue to evidence deficits in social skills (Qi & Kaiser, 2004; Stanton-Chapman et al., 2007), suggesting some continuity in the correlates of language difficulties from the toddler to preschool period. However, emotional and behavioral problems also become reliably and positively associated with language difficulties during preschool (Beitchman et al., 1989; Willinger et al., 2003; Qi & Kaiser, 2004; McCabe, 2005; Stanton-Chapman et al., 2007), with more severe behavioral problems noted among children with receptive or pervasive language difficulties, compared to expressive language impairment (Beitchman et al., 1989; Estrem, 2005; McCabe, 2005; van Daal et al., 2007). Language difficulties may confer non-specific risk for the development of behavioral problems by limiting children's exposure to social-linguistic opportunities or through other mediating variables. Thus, consideration of additional child-specific and contextual processes that may mediate or moderate these relations, and thereby contribute to particular outcomes, is necessary.

Despite the well-documented comorbidity between linguistic and behavioral difficulties, the potential mechanisms underlying this relation are not well understood. At least three explanations have been proposed for their co-occurrence (Schoenfeld et al., 1988; Dionne et al., 2003; Willinger et al., 2003). First, language difficulties may confer risk for behavior problems. For example, children may react with frustration and engage in problematic behaviors when they are unable to communicate effectively with others. In support of this explanation, two studies have reported that lower levels of early language skills temporally preceded the development of behavioral problems (Fagan & Iglesias, 2000; Brownlie et al., 2004).

Second, behavior problems may interfere with the development and acquisition of developmentally relevant language abilities and thus contribute to language difficulties.

Third, the association between behaviour problems and language difficulties may stem from shared etiologies or risk processes (Gilliam & de Mesquita, 2000). These three potential explanations often are discussed as mutually exclusive, competing explanations (e.g., Pine et al., 1997). However, given the heterogeneity of the population of children with comorbid linguistic and behavioral difficulties, it is unlikely that there is a single explanation for the causal mechanisms underlying this comorbidity (Stevenson, 1996). Rather than ascertaining which explanation is most valid, the goal of future research endeavors could be to ascertain which explanation(s) hold true among which children. A developmental psychopathology perspective provides one potential framework to facilitate this goal.

A developmental psychopathology perspective in fact can be used as a unifying framework from which to examine questions concerning the development of complex clinical phenomena (Rutter & Sroufe, 2000; Cicchetti & Toth, 2009; Drabick, 2009), and often includes consideration of typical and atypical development, underlying developmental processes, and transactional relations across multiple domains of risk and protective factors. Given that the associations between language difficulties and behavior problems likely differ based on a number of factors (e.g., type of language difficulties, developmental period, timing of language and behavior problems, and moderating variables at the individual and contextual levels), consideration of these developmental psychopathology principles may illuminate the nature of the interrelations between language difficulties and behavior problems.

Moreover, it is possible that developmental processes underlying the development of comorbidity may vary by sex, especially given: (1) higher rates of behavior problems and language difficulties among boys (Campbell, 2002; Horwitz et al., 2003), and (2) sex differences in interrelations among risk factors for behavior problems (Blatt-Eisengart et al., 2009). The empirical literature however has not yet provided sufficient evidence to inform separate models for boys and girls.

From a neuropsychological perspective, most research has focused on the possible significance of working memory deficits. Working memory involves the storage and manipulation of information so that this information can guide subsequent responses (Hongwanishkul et al., 2005), and thus is important for verbal and behavioral output. In general, working memory is positively correlated with language achievement and production of complex spoken language (Adams & Gathercole, 1995; Wolfe & Bell, 2004); moreover, phonological working memory deficits have been well documented among children with language difficulties (Gathercole & Baddeley, 1990; Baddeley et al., 1998). Preschoolers' working memory prospectively predicts vocabulary acquisition (Gathercole & Baddeley, 1989; Gathercole et al., 1992; Leclercq & Majerus, 2010) and is positively associated with spoken language comprehension, longer utterances, syntactic diversity, and lexical-semantic abilities (Adams et al., 1999; Adams & Gathercole, 2000; van Daal et al., 2008). The link between phonological working memory and vocabulary seems to be strongest in early childhood (Gathercole et al., 2005), which supports the inclusion of working memory in models focusing on word learning

during this developmental stage. Given phonological working memory's importance for recognizing and remembering phonemes, words, and phrases (Baddeley et al., 1998; Bannard & Matthews, 2008), working memory may be particularly important for processing simultaneous situational demands and limiting phonological memory decay when children are faced with challenging linguistic tasks (e.g., monitoring conversations, conversing, and playing simultaneously; Gillam et al., 1998). Poor working memory may make conversational exchanges challenging, possibly putting children at additional risk for missed social-linguistic opportunities and peer exclusion.

Working memory performance also has been linked to externalizing behavior problems, although in the externalizing literature, working memory is often studied under the umbrella term of executive function (Senn et al., 2004). Several studies have demonstrated negative associations between disruptive behaviors and: (1) executive function performance among preschoolers (Cole et al., 1993; Hughes et al., 2000; Hughes & Ensor, 2008; Bierman et al., 2009), and (2) poor working memory (Hooper et al., 2003; Aronen et al., 2005; Ripley & Yuil, 2005). Deficits in working memory may interfere with children's ability to remember

requests, follow directions, complete multi-step tasks, and engage in problem-solving skills, each of which may confer risk for behavior problems (Gathercole et al., 2008). Taken together, these results establish an association between working memory and both language difficulties and behavior problems. Another key factor to be included in any developmental model is temperament, which can be defined as the basic, probably genetically determined, predisposition to develop a pattern of psychological functioning. Although temperament is to be seen as a predisposition, as the environment can shape the final personality in a large and significant way, difficult temperament has been shown to confer risk for externalizing behavior problems among young children (e.g., Rothbart & Bates, 1998; Campbell, 2002; Sanson et al., 2004). Studies assessing individual dimensions of difficult temperament have demonstrated direct links between behavior problems and: (1) soothability and anger (Szabó et al., 2008), (2) impulsivity and anger (Karreman et al., 2010), and (3) activity, low adaptability, and negative affect/emotionality (De Pauw et al., 2009). Among preschool-aged children, proneness to anger is associated with externalizing behavior problems (Rothbart et al., 2000; Eisenberg et al., 2001; Rothbart et al., 2001; Hayden et al., 2005) and low levels of prosocial behaviors (Denham, 1986). With regard to children's language development, lower levels of linguistic mastery have been reported among children with difficult temperament (Slomkowski et al., 1992; Dixon & Shore, 1997; Dixon & Smith, 2000; Noel et al., 2008).

Researchers have hypothesized that more flexible and easygoing temperamental styles promote parent–child interactions that are conducive to learning words and allow parents to scaffold their children's emerging language skills (Noel et al., 2008). Thus, both working memory deficits and dimensions of difficult temperament, particularly a tendency to experience anger/frustration, may predispose young children to both externalizing behavior problems and disruptions in their language development, and consequently are conceptualized as shared risk factors for linguistic and behavioral comorbidity.

It is worth noting, however, that any multilevel, ecological model of development (e.g., Bronfenbrenner, 1979) indicates that child and contextual risk factors exert shared and interactive effects on children's outcomes (Drabick, 2009; Rutter & Sroufe, 2000). Therefore, children's immediate environmental contexts are likely to influence whether – and to what extent – linguistic, behavioral, or other risk processes lead to co-occurring linguistic and behavioral difficulties. Broadly speaking, qualities of the parent–child interactional and linguistic context represent significant sources of variability in explaining the development of comorbid language and behavior problems and may be linked to risk or resilience for this comorbid condition. For example, among children with either behavioural or linguistic difficulties, responsive parent–child interactions and/or higher levels of linguistic expressiveness in the home may promote resilience from co-occurring language and behaviour problems, whereas problematic parent–child interactions and low levels of linguistic expressiveness in the home may contribute to the development of co-occurring language and behaviour problems. Another significant contextual / environmental factor to be discussed is the interaction with peers. Children's engagement in play (e.g., prosocial, interactive, pretend play) has been linked to positive socio-emotional development (Fisher, 1992; Gagnon & Nagle, 2004), including stronger self-regulatory skills (Whitebread et al., 2009), higher social engagement, and lower levels of aggressive behaviours (Fantuzzo et al., 2004). However, children with language difficulties are often poorly equipped to engage in socially competent and interactive peer play, which is associated with multiple linguistic competencies (Craig-Unkefer & Kaiser, 2002), including higher concurrent levels of

receptive and expressive vocabulary (Mendez et al., 2002; Fantuzzo et al., 2004; Cohen & Mendez, 2009). Children with language difficulties are chosen less often as playmates for social pretend play activities (Gertner et al., 1994) and are less able to join ongoing play (Craig & Washington, 1993). Exclusion from peer play is likely to further intensify the social–linguistic delays of language-impaired children (Rice, 1993) and increase the likelihood that they will engage in aggressive or disruptive behaviors to achieve their interpersonal goals (Coie & Kupersmidt, 1983; Fantuzzo et al., 2004). Overall, these results suggest that limited opportunities for language-mediated social development may confer risk for behavior problems in the context of language difficulties. Putting together most of these aspects in a developmental model, Carpenter and Drabick (2011) suggested that difficult temperament and deficits in working memory act as initiating factors in the pathway that may culminate in comorbid language and behavior problems. Specifically, children who are temperamentally prone to anger and frustration may be more likely to act out behaviorally, and to evidence difficulty participating in early academic and social interactions that would promote language skills. Poor working memory may preclude or lessen children’s abilities to be compliant with adult requests and to follow complex directions, as well as children’s acquisition of vocabulary words and memory for phonemes. However, these authors noted that associations among these risk factors and comorbid linguistic and behavioral difficulties depend on moderating contextual and child-specific factors, which may exacerbate risk or promote resilience. Specifically, children’s emotion regulation capacities, parents’ engagement in linguistically stimulating activities, and the quality of parent–child interactions are hypothesized to be significant moderators of these risk processes. Similarly, child-specific factors (i.e., type of language difficulty, adaptive communication) likely moderate the relations between linguistic and behavioral difficulties, and determine whether – and to what extent – these difficulties are translated into more serious impairments. Specifically, children with higher levels of adaptive communication may be able to compensate for deficits in structural language skills and to minimize the effects of peer rejection and decreased opportunities for social–linguistic interactions. In addition, higher levels of receptive language skills likely permit more successful navigation of peer relationships (Craig, 1993). Thus, higher levels of these moderating processes (i.e., more responsive parent–child interactions, higher adaptive communication) are hypothesized to promote resilience, whereas lower levels of these processes are expected to confer risk for co- occurring language and behavioral difficulties. Furthermore, at least two potential mechanisms may underlie a transactional relation between language and behavior.

Pervasive, negative relationships with peers and adults are proposed to mediate the pathway from behavior problems to further language difficulties, whereas limited social–linguistic interactions are proposed to mediate the pathway from language difficulties to behavior problems. Given the observed heterogeneity in this population of comorbid children, specific factors likely influence which pathways children follow.

CONCLUSION

Given that language facilitates change in treating intra- and interpersonal conflicts, clinical assessment of adolescents referred for mental health treatment should include routine

evaluation of a range of language skills (Durkin & Conti-Ramsden, 2010). Moreover, numerous psychological interventions rely heavily on the individual's ability to use language to identify treatment goals, articulate the difficulties they are experiencing and exceptions to problems, reflect on their behavioral strengths and resources and regulate their own behavior and interactions. It should be remembered that psychoanalysis was described by Freud as the "talking cure".

When a language impairment is diagnosed, therapists must be apprised that there are areas rife with opportunities for miscommunications with some adolescents and where inaccurate inferences may be made about their behavior. Moreover, since there are therapeutic techniques for helping children and youth with higher order language impairments, failing to use such techniques is a serious gap in treatment that could be remedied (e.g., O'Donohue et al., 1999). As an example, overlooking higher order language impairment in adolescents is worrisome since this aspect of language is critical for written and spoken academic tasks as well as for social communication (Nippold, 2007; Conti-Ramsden et al., 2009). Therefore, measures of higher order language (and possibly of any aspect of language, considering both the expressive and receptive functions) should be included in future studies of children even younger than adolescence to determine how early such problems can be identified. Having made this recommendation, it is important to acknowledge that there is a paucity of standardized measures of higher order language with adequate sensitivity and specificity. Moreover, children's expressive language ability measured in a controlled testing situation may not correspond directly to their actual ability to communicate in everyday situations. Children's levels of 'adaptive communication' – which can be operationalized to denote 'real-world' usage of language to convey one's needs, feelings, and goals – may provide additional information about children's linguistic functioning that is not captured by standardized language testing scores. Several studies have demonstrated that behavior problems can be reduced through the provision of training in adaptive communication skills (for a review, see Mirenda, 1997). Adaptive communication may therefore be an important protective factor to include in a conceptual model of comorbidity, as higher levels may buffer the development of behavior problems among children with language difficulties.

To end with, it should be stressed that the connection between language and psychopathology seems to extend not only in childhood and adolescence, but also to adult age. This topic has been studied for instance in patients with schizophrenia, in whom an abnormal pathway to language development is considered by many authors to play a key role in the psychopathology of these patients (for review see Rapp & Steinhauser, 2013).

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Chapter 5

**INTERCULTURAL NONVERBAL COMMUNICATION
COMPETENCE: MEETING BODY LANGUAGE
CHALLENGES IN FACILITATING AND WORKING
WITH STUDENTS FROM CULTURALLY DIVERSE
BACKGROUNDS IN THE AUSTRALIAN HIGHER
EDUCATION CONTEXT**

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ABSTRACT

This chapter examines the role played by intercultural nonverbal communication competence of Australian university staff members working in a culturally diverse setting and its impact on the management of intercultural working relationships with the students. The discussion starts with a critical review of relevant nonverbal communication theories (e.g., paralinguistics, proxemics, and kinesics). Then it focuses on various body language challenges academic and professional staff members working in Australian universities face on a daily basis while facilitating and working with students who come from diverse linguistic and cultural backgrounds. The body language facing academic staff members inside classroom is challenging due to intricate intercultural differences and potential intercultural misunderstanding. It is argued that an issue common to both academic and professional staff members is that some of them may have insufficient intercultural nonverbal communication competence and few have received intercultural nonverbal communication training relevant to their work roles though their verbal communication skills are sound. It is believed that competent intercultural nonverbal communication is crucial and indispensable for both academic and professional staff members working in Australian university context because Australian higher education sector has such a linguistically and culturally diverse environment and it has an internationally high-stake profile with some

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universities having as many as 20% or more international students from different cultures. This has created pedagogical implications that students are likely to achieve better learning outcomes and have better learning experience when their teachers are able to demonstrate their intercultural nonverbal communication competence. It is the same case with professional staff members whose competent intercultural nonverbal communication skills can accommodate students' various needs (e.g., psychological, emotional, and social). In a word, Australian university staff members' good intercultural understanding (language and cultural knowledge about international students, so-called clients) and effective nonverbal communication skills will contribute to presenting their universities a positive public image, internationalizing Australian higher education industry and making it competitive globally.

Keywords: Multicultural nonverbal communication, Australian universities, body language, paralinguistics, proxemics, kinesics

1. INTRODUCTION

Australia is one of the most popular destination countries to which more international students from the world over have been mobilizing for further education to expand their career opportunity. In Oct 2013, there were 502,328 international students¹ studying in Australia and in Oct 2014, the student number went up to 563,645. The top five countries from which 51.3% international students come from are China (150,521), India (59,138), Vietnam (28,992), South Korea (26,598), and Thailand (23,713). These countries are generally classified as belonging to collectivistic culture as opposed to individualistic culture which Australia comes under (Hofstede, 2001). People from collectivistic and individualistic cultures have contrasting cultural values which see them different from each other in verbal communication (e.g., making requests, using address terms) and nonverbal communication (e.g., having different concept of time and space, using different body languages). Because of such enormous cultural differences and such a high-stake international student population studying in Australian universities, it is essential that relevant stakeholders, particularly international students from collectivistic culture and Australian university academic and professional staff members have developed appropriate intercultural knowledge and nonverbal communication skills so that they can study and work in a healthy environment with their well-beings accommodated.

While Australian universities have ambitions to promote internationalization of Australian higher education, participate in international engagement and attract more international students for quality education and best learning experience possible (Barker & Mak, 2013), training in intercultural nonverbal communication competence needs to be provided to the frontline stakeholders (academic and professional staff, including management at all levels) so that they are willing to appreciate cultural diversities and approach intercultural differences positively. To discuss intercultural nonverbal communicative competence, the author will start with reviewing relevant literature in nonverbal communication theory with reference to intercultural communication context.

¹https://internationaleducation.gov.au/research/International-Student-Data/Documents/Monthly%20summaries%20of%20international%20student%20enrolment%20data%202014/10_October_2014_MonthlySummary.pdf.

Nonverbal communication covers paralinguistics (Crystal, 1971; La Barre, 1976), proxemics (Hall, 1966), and kinesics (Birdwhistell, 1970). Next comes the in-context discussion of various nonverbal communication challenges academic staff members (Neill & Caswell, 1993; Quinlisk, 2008) and professional staff members (Furnham & Petrova, 2010) working in Australian universities face on a daily basis while facilitating and working with students who come from diverse linguistic and cultural backgrounds.

Finally the chapter ends with a conclusion in which implications of intercultural nonverbal communication training in Australian higher education sector are discussed.

2. INTERCULTURAL NONVERBAL COMMUNICATION

Intercultural nonverbal communication sees people from different linguistic and cultural backgrounds interact with one another using their bodily resources readily available. It plays a fascinating role in that not only can people communicate a universally shared meaning but also negotiate context-embedded messages across cultural boundary. This requires participants in intercultural nonverbal communication to have appropriate intercultural knowledge and skills to make it happen. Research has shown that nonverbal communication, because of bodily attributes and practical use, is much more frequently employed than verbal communication in human interaction. It is interesting to consider the fact that we can choose to remain speechless but can hardly choose not to send messages nonverbally, even if unintentionally. For example, people have to display their facial expressions no matter whether they are happy or sad. It is essential to note the context in which intercultural nonverbal communication takes place can help explain the intended message. However, intercultural nonverbal communication can be complicated due to its multi-complex and multi-dimensional activities (Samovar, Porter, McDaniel, & Roy, 2013). These are reflected in the fact that intercultural nonverbal communication can be difficult and challenging unless participants are competent in intercultural communication and nonverbal communication. In this sense, it is meaningful to look at nonverbal communication in intercultural context. Although its dimensions can be explored in different ways (P. A. Andersen, Hecht, Hoobler, & Smallwood, 2003), nonverbal communication studies are broadly classified in this chapter into such categories as paralinguistics, kinesics and proxemics in the following discussion.

2.1. Paralinguistics

According to Crystal (1971) and La Barre (1976), paralinguistics covers such linguistic elements as tone of voice, volume of speech, speech rate, etc. and they each communicate meaning of a certain kind to the intended and unintended hearers. Kendall (2013) thinks that when people speak, their utterance will have a particular speech rate, pause, and some intervals of silence. They can be studied from a sociolinguistic perspective as to why one cultural group accepts longer silence time whereas another prefers to avoid it. A speaker's different tone of voice is found to have different impact on the listeners' memory of texts (Helfrich & Weidenbecher, 2011). Specifically they find that both high and low tones of voice tend to help retain longer memory of text content than medium tone of voice. Caucci

and Kreuz (2012) claim that a speaker can convey a sarcastic message through a specially designed tone of voice in a particular situation. Intercultural communicators need to take special care to become aware of cultural sensitivity so that they avoid using any tone of voice that may sound arrogant or ironic to the other party.

Appropriate volume of speech is important for the intended audience to hear the message and whether loudness is appropriate or not may be interpreted differently across cultures. Volume of speech appropriate to a large audience in a lecture hall may be considered too high for a small group people in a lounge. Crookes (2003, p. 72) discusses the relevant intercultural communication challenges teachers face as follows.

We expect speech to have a volume appropriate to mutual interpersonal distance, as culturally defined, for example; and when such expectations are not met – when, for example, what we interpret as “shouting” takes place at close range, or when whispering takes place at a distance – the strict content intended by the words alone may be overridden by the implication drawn by the listeners as to what the speaker really means by behaving in this unusual way.

The above complex issue is made more challenging in intercultural interaction, frustrating not only teachers in the classroom setting, but also parties engaged in everyday social interaction. Although negative stereotyping is to be avoided, there is an issue among some Black American high school students so that a set of values had to impose on student behavior school administrator considered “underclass” and “particularly stigmatized was “loud” behavior, which not only marked the individual as “underclass” but also was viewed as dishonor to the race” (Cole & Omari, 2003, p. 788). Voice volume considered normal in one context could be regarded as inappropriate in another. In March 2014, Mrs. Marian Robinson², President Obama’s month-in-law, was allegedly reported to be “barking at the staff since she arrived” at Beijing Westin Hotel with her daughter Michelle Obama and her two granddaughters. Similarly, some of Chinese tourists were criticized for their irritating habits, including “talking loudly in public, jaywalking, spitting, and carving characters on items in scenic zones³.” As people travel more to other countries, they have a better chance, when having some pre-departure briefing sessions, to increase their intercultural awareness and understand cultural differences through observing, interacting, and reflecting.

There is a relationship between speech rate and listening comprehension and it is generally believed that listening comprehension decreases as speech rate increases (Griffiths, 1992). This is particularly the case with learning a foreign or second language which may have different phonetic, lexical, or syntactic systems from the learner’s first language (L1). For example, English and Chinese belong to two different language families, with the former being from the Indo-European family and the latter being from the Sino-Tibetan family (Akmajian & Demers, 2010; Campbell, 2013). Because their phonetic, lexical, or syntactic systems differ and there are socio-cultural and pragmatic differences between the two

² Martosko, D. (2014). Beijing hotel workers already ‘fed up’ with Obama entourage in 3400-square-foot, \$8,350-per-night suite inconveniencing ‘pretty much everyone’ — and the first lady’s mother is ‘barking at the staff’. *Daily Mail*. 23 March 2014. Retrieved 26 Sept. 2014 from <http://www.dailymail.co.uk/news/article-2586367/Beijing-hotel-workers-fed-Obama-entourage-3400-square-foot-8-350-night-suite-inconveniencing-pretty-ladys-mother-barking-staff.html>.

³ The third umpire. In: One of China’s four vice premier, Wang Yang, *Business Day* (South Africa), May 21, 2013.

languages, faster speech rate can considerably affect Chinese/English speakers' listening comprehension of English/Chinese as a second language (L2).

2.2. Kinesics

Kinesics (Birdwhistell, 1970) has a focus on studies of a wide range of body-related cues, such as facial expressions, eye contact, head movement, gesture, and body ornaments. Body language researchers' kinesics projects and research outcomes are colorful. It is claimed that facial expressions are universally similar, but Ekman and Friesen (2003) question whether people from different cultural backgrounds share the same facial expressions. Relying on laboratory-based experiment results, Ekman (2006, p. 24) demonstrates that "the Japanese masked their facial expressions of unpleasant feelings more than did the Americans", thus concluding that Japanese speakers display their facial expression emotions differently from those displayed by American speakers. Furthermore, he believes that there is more than one "surprise" facial expression. Similarly, Yang (2013b, pp. 108-110) explains there are different kinds of "smiling" emotions and varied implications in Chinese, with some of them being complimentary (e.g., *wēixiào*, 微笑, a gentle smile with emotional displays of warmth, gentleness and friendliness) and others being derogatory (e.g., *jiǎnxiào*, 奸笑, a sinister smile with emotional displays of villainess). As people from different cultures input unique cultural meaning into their facial expressions, apparently there is a need to consider the cultural uniqueness of these emotions when they are displayed in given cultural contexts.

As for eye contact, one study reports that American blacks use less speaker-directed gaze than their white counterparts (Greenbaum & Greenbaum, 1983). Maintaining eye contact is essential in English communication and all parties are expected to maintain appropriate eye contact while engaged in talk-in-interaction. However, things are more complicated in Asian communication context where high social power distance (e.g., teacher-student) has impact on interpersonal relationship. Head movement is characterized by heading nodding for 'yes' and heading shaking for 'no'. But there are also exceptions in India where Indian⁴ speakers wobble their head for 'yes'. This sends a head shaking with 'no' to speakers from most cultures. What is most striking about Bulgarian⁵ head movement is that Bulgarian speakers nod their head for 'no' and shake their head for 'yes'. McNeill (2005, p. 38) groups gestures into four categories: "iconic, metaphoric, deictic and beat" and explains their definitions. While iconic gesture is indicative of a concrete image or picture being described, metaphoric gesture is symbolic of an abstract thing or idea under discussion. They can be a head, finger or hand gesture of various kinds. Deictic gesture is generally used to point to a certain direction or a thing in the form of a finger. It can also be executed in the form of a lip-pointing used by Laos speakers (Enfield, 2001), a chin-up-pointing used by Chinese speakers (Yang, 2010, 2013b). Other hand gestures can send many culture-loaded messages. For examples, Cantonese⁶ speakers tap their finger tips on the table for thanking when being served some food or tea in a Chinese restaurant (Yang, 2013b). Beats are "mere flicks of the hand(s) up and down or back and forth that seem to 'beat' time along with the rhythm of

⁴ http://www.youtube.com/watch?v=eJ0SuD_ulVk.

⁵ <http://www.youtube.com/watch?v=GS8Sh2NfVM0>.

⁶ http://www.youtube.com/watch?v=47ng8jkK_CA.

speech” (McNeill, 2005, p. 40). Gestures can be very colorful, expressive and diverse with some shared by different cultures and others being culture-specific.

Body ornaments are used by people from diverse cultural backgrounds around the world to represent their unique cultural traits and make them different from those from other cultures. These cultural phenomena can be studied through examining different color ornaments and object ornaments, which carry specific cultural and psychological meanings. Chromatics is about how significantly colors are valued in a given cultural group (Hurn & Tomalin, 2013). At a wedding party, a traditional Chinese bride wears a red wedding dress⁷ while an English counterpart wears a white wedding gown⁸. At a funeral ceremony, mourners wear black or dark-colored suits in most Western countries (e.g., the UK, Australia and the US) whereas most mourners wear white clothes (it could vary with the occasions; people wear black with a white flower and/or a black armband at a state funeral.) or dark-colored ones in many Asian countries (e.g., China, Japan) (Hurn & Tomalin, 2013; Leach, 1958). Objects are often used to decorate human bodies and outlook in various ways so that they appear smart, fashionable and culturally identifiable in public places. One of the significant reasons is cultural identity. As Seeger (1975) indicates, body ornaments should be studied with reference to their cultural context, thus bringing to light their culturally unique meaning. Nonverbal communication can take on a very impressive, striking, and new mode and look more multimodal and multifunctional, when it occurs in intercultural context.

2.3. Proxemics

The term proxemics is created by Hall (1963) and it refers to the study of how interpersonal distance and space is maintained between people from the same or different cultural backgrounds. Nonverbal immediacy is used to describe a range of nonverbal cues, such as proxemic closeness (e.g., space), bodily closeness (e.g., touch), kinesic cues (e.g., eye contact, gaze and smiles), vocal expressiveness and informal dress communicators depend on to achieve affective and relational communication while engaged in interaction (J. F. Andersen, Andersen, & Jensen, 1979). Hall (1966) views personal space as a dimension constantly hidden in intercultural communication, but meaningful as its research can help understand why intercultural misunderstanding occurs due to different space management and how people can communicate effectively across cultures with consideration and awareness of others’ space. While smaller interpersonal distance and space is kept among members of collectivistic culture, greater interpersonal distance and space is maintained among members of individualistic culture. For example, interpersonal space considered culturally appropriate by European Americans may be regarded as distant by Arabs whereas interpersonal space considered culturally appropriate by Arabs may be regarded as close by Northern Americans (Ting-Toomey, 1999).

Furthermore, gender has a role to play in people’s dealing with space and distance in intercultural communication settings. Whereas people generally do not socially accept the practice that the same-sex persons live in one room in some cultures, the same practice is

⁷ <http://www.youtube.com/watch?v=SxPcXfjNzKY> (It is noted that some young lovers living in the cities in China have chosen to have their wedding ceremony in the Western fashion with the bride wearing white wedding gown.)

⁸ <http://www.youtube.com/watch?v=OLTg1WOKqC0>.

regarded socially acceptable in others. For example, it has been common in many Asian countries that non-gays or non-lesbians adult students share a university dormitory because of limited room resources. Another example to explain gender role and social distance is about Saudi women who do not stay close to men due to social norm and religious practice in Saudi Arabia (Hamdan, 2005). Additionally, Saudi women are expected not to shake hands with men and keep appropriate distance from them in public for the same reason. Gender role is defined in the cultural and religious practices which are worth consideration in studying multicultural nonverbal communication.

3. UNDERSTANDING AND MEETING MULTICULTURAL NONVERBAL COMMUNICATION CHALLENGES IN AUSTRALIAN HIGHER EDUCATION SETTING

Most international students studying at Australian universities come from Asian countries which have become the center stage of the world. Their home countries are typical of collectivism in contrast to individualism which is characteristic of Australia. Collectivism is characterized by its group conformity, indirect communication, nonverbal cues while individualism is highlighted by its individual-centeredness, direct communication and verbal utterances (Gudykunst, 1997; Hofstede, 1980; Scollon, Scollon, & Jones, 2012; Triandis, 1990). Such culturally defined features explain why people belonging to collectivistic culture or individualistic culture communicate and behave in different ways. Simply because there are such contrasting differences between collectivistic culture and individualistic culture, cross-cultural misunderstanding is likely to occur when people from these cultures interact with each other. As classrooms in the West are mostly multi-ethnic and inter-ethnic, understanding ethnic communication, including its multicultural nonverbal communication patterns, comes into play and meanwhile challenges, such as “inferior-superior dichotomy” (Edward T. Hall & Hall, 1986, p. 364) and asymmetrical style of nonverbal communication (Yang, 2013a), for classroom teachers emerge. Intercultural nonverbal communication may add to misunderstanding due to its implicitness, high-context and culture-binding. Although many of their cultural differences between the East and the West have been identified and investigated (Brown, 2009; Jackson, 2014; Martin & Nakayama, 2014; Samovar et al., 2013; Scollon et al., 2012), comparatively insufficient work has been done about intercultural nonverbal communication between teachers and students coming from different language and cultural backgrounds. In this chapter, focus will be placed on intercultural nonverbal communication differences in Australian universities which are characterized by multilingual and multicultural profiles.

3.1. Accommodating Students’ Learning Needs As Words Only May Fail to Communicate

Classroom communication is essential in that the teacher is facilitating the students in acquiring various skills and learning knowledge and such guidance is implemented through verbal and nonverbal communication. Although verbal communication in the classroom

context is actioned through teacher talk, its nonverbal cues are embedded and paralinguistic features are projected through speech rate, volume, and tone of voice. It is important to note that they not only convey some unintended meaning, but may also have positive or negative impact on the students. For example, nonverbal communication can work to attract students' attention and help them learn and become motivated to learn more, on the one hand, and it may make them bored and lose attention if not well managed on the other.

One of the issues lies in the speech rate used in the classroom. A teacher's speech rate needs to accommodate newly arrived international students' receptive abilities and guide them with a purpose so that they are encouraged to follow. The teacher needs to be aware that failure to follow the fast talker can occur because English as second language (ESL) students may initially be in the habit of mentally translating received information or have difficulty understanding some culture-loaded words or slangs in the talk. Furthermore, students sitting at the back of the lecture theatre may not hear if a teacher talks at a low volume and it seems that weak students tend to choose to sit there. As far as tone of voice is concerned, Helfrich and Weidenbecher (2011) find in their experiment that speakers using low-pitched voices are more favored than those using high-pitched voices, and that long-term memory is facilitated better by both high- and low-pitched voices than by medium-pitched voices. While monitoring their student learning process and progress, an experienced teacher always keeps alert and is ready to adjust their speech rate, volume of voice and tone of voice dynamically and flexibly to facilitate student learning.

3.2. Body Language Speaks Louder Than Words

One of the commonly misunderstood phenomena is that teacher-student verbal interaction in Australian classroom context naturally leads to communication and student learning so long as a teacher speaks English fluently. Such misunderstanding apparently ignores two basic facts. First, it fails to recognize the role body language plays in the classroom communication. Classroom teaching is more than a two-way talk activity only because body language speaks louder than words and its appropriate and purpose-built application adds to meaningful interaction (Harmer, 2007). Successful classroom communication involves not only a flexible use of easy-to-understand language expressions but also an empathetic understanding and effective use of body language for pedagogical purpose and for intercultural communication.

Body language (e.g., iconic, metaphoric, and deictic gestures) conveys thoughts and meanings, and effectively supports and explains verbal communication as classroom instructions, thus helping students understand learning tasks. When returning to McNeill's (2005) iconic gesture, we find using this body language presents a vivid image of the object under discussion and builds connection between shape and size and semantic meaning intended. Researchers conducting experiments on the relationships between speech and accompanying iconic gesture find that there is a high correlation in communication between the two (Beattie & Shovelton, 2001). For example, the teacher describes the differences between the shape of tropical fruits 'lychee' and 'rambutan', using an iconic hand gesture to map out a round shape for the former and an oval shape for the latter while pointing to the images projected on the screen. The iconic gesture is effectively used to highlight one of the important physical features of the two fruits being discussed, thus giving students a good

impression on how to recognize their important difference. As another example, White and Gardner (2012) describe how classroom teachers can create X-factor in the classroom environment through using effective nonverbal communication and maximize student learning experience by applying teaching methods supported by psychology and cognitive science.

Body language conveys emotions that help build teacher-student rapport and mutual trust. University teachers' enthusiasm in the profession may be reflected in their facilitating hand gesture and encouraging eye contact which can help inspire and stimulate student motivation to learn more cooperatively. Emotion and body language work to appeal to the students' attention and engagement in the topic discussion. For example, when explaining Adult Migrant English Program (AMEP), the teacher, using an open and warm embracing hand gesture, talks about how to accommodate the psychological and cross-cultural adaptation needs of refugee learners by creating a welcoming classroom environment (e.g., team them up with fellow students who speak the same L1). The class is also reminded that refugees are treated equally in Australia and some of them have skills in different trades (e.g., plumbers, carpenters and mechanical engineers, etc.) although others remain even illiterate in their home language due to wars and trauma experience (Benseman, 2014). The class is filled with a positive atmosphere of interpersonal emotion and cross-cultural understanding which increases students' confidence and trust in the teacher and their philosophy through verbal messages and nonverbal cues in particular. For another example, teachers use encouraging eye contact to motivate adult L2 learners to be willing to participate and communicate (Brown, 2007). Understanding the adult learners' potential capabilities, teachers guide them to use their analytical skills and mobilize them to contrast and analyze differences between their home language and English. Meanwhile they encourage them to engage in task-based learning and pair/group discussion by using warm and trusting facial expressions. Furthermore, students' use of gesture, gaze, body orientation for collaboration and socialization with their fellow students is related to task performance and effective communication in context (Platt & Brocks, 2008).

Second, it is important for Australian university staff members, particularly classroom teachers, to become aware of and literate about various multicultural differences in nonverbal communication when they interact with international students because their body languages are connected with their own cultural values and social or religious practices. Even if teachers may insist on what is normally accepted in an Australian classroom where students have diverse cultural backgrounds (Crookes, 2003, p. 75), they most often find it helpful to build and maintain teacher-student rapport when they show genuine interest in individual student's language and culture and recognize their cultural experiences using appropriate body language. As many Australian universities are working to promote international engagement and internationalization of Australian education industry, their staff members find it beneficial to become aware of multicultural nonverbal communication styles and patterns. Although eye contact is important in English communication, they need to know students from other cultural backgrounds may not maintain eye contact as expected due to different cultural perception (e.g., high power distance between people of different age and status may affect talk turns of those from collectivistic culture) (Greenbaum & Greenbaum, 1983; Yang, 2013a). In beckoning international students (e.g., from China and the Philippines), Australian teachers need to avoid using a single-upright-finger beckoning (e.g., used when beckoning a dog in China and the Philippines) simply because it is an insulting gesture in Chinese and

Filipino cultures. Silence among L2 learners is very common and normal particularly when they are new in Australia and may need to adapt, due to cultural shock and anxiety, to the host learning environment which differs much from their previous one. Individualistic culture focuses on verbal communication and English-speaking academics tend to view international student silence negatively as keeping silent is generally less acceptable in English speaking world (Martin & Nakayama, 2014). Additionally, there are cultural differences between Australian mainstream society and Australian Aboriginal communities. It is found that different Australian ethnic groups have different response to silence as a social practice. Mushin and Gardner (2009) report that Australian Aboriginal speakers observe longer silence in conversation which is socially accepted Aboriginal communities whereas it is avoided among Anglo-Saxon Australians and is not practiced in the white communities. It would be a friendly reminder for Australian university staff members to be aware of such ‘sociolinguistic interference’ which is to be approached positively and flexibly as part of multicultural nonverbal communicative competence (e.g., cultural knowledge and social skills). So it is the case with international students coming from different language and cultural backgrounds. To practice ‘student-centered’ philosophy, Australian universities need to provide their staff members with intercultural nonverbal communication training as part of professional development and enhance their intercultural nonverbal communication competence. Intercultural nonverbal communication is more effective and beneficial when teachers and students are aware of its differences and able to adapt to them.

3.3. Nonverbal Immediacy: Dos and Don’ts

Nonverbal immediacy is defined as speechless behaviors or actions that are performed to narrow social, physical, or psychological distance or space between people engaged in interaction (Malachowski & Martin, 2011; Richmond, 2002). It is characterized by integrating paralinguistic cues (e.g., warm vocal cues), proxemic cues (e.g., bodily closeness) and kinesic cues (facial expressions like smiling) all in one. Such nonverbal complex comprises multidimensional bodily cues that work together to achieve communication purpose (Samovar et al., 2013; Yang, 2013b). Although nonverbal immediacy is generally positive and intended as such in university setting, it needs to be practiced carefully and with discretion. It is important for Australian university staff members to see the specific situation in which it is applied with reference to different cultural practices and keep in mind the multicultural differences of nonverbal communication.

Researchers are confident that if teachers use nonverbal immediacy appropriately it is conducive to effective communication and motivation, thus having positive impact on students’ affective learning (Plax, Kearney, McCroskey, & Richmond, 1986; Witt, Wheelless, & Allen, 2004) and on effective teaching outcomes (Özmen, 2011). For example, research outcomes show that teachers’ nonverbal immediacy in the classroom interaction contributes to their students’ willingness to communicate and better learning outcomes (Yu, 2011). If teacher-student rapport is developed and maintained with the help of nonverbal immediacy, teachers and students are more likely to have genuine interest and trust in each other. When this occurs, both parties will find collaborative teaching and learning process effective and enjoyable.

Despite its advantages, increased teacher immediacy may cause some potential issues to emerge. It is helpful to know that some of nonverbal behaviors should be avoided due to cultural differences in nonverbal communication. First, male teachers should make efforts to avoid using excessive nonverbal immediacy. It is noted that female and male teachers' excessive use of nonverbal immediacy are rated differently. While the former group's behavior tends to be rated positively, the latter group's behavior is rated negatively (Rester & Edwards, 2007). Second, it is culturally sensitive for male teachers to prevent themselves from having body contact, for instance, a hand shake or a cheek kiss, with Arabic-speaking females due to their religious practice. However, Arabic-speaking males usually keep less space with their friends of the same sex and tend to touch them more often than do those from the Western countries, and they may also be "close to or touching strangers" (Nydell, 2012, p. 26). Third, people from the East and the West have different sense of public and private space. What seems to be appropriate social distance to Arabs is somewhat too intimate for Westerners. Nydell (2012) also reports that there is nothing strange for Arabic speakers of the same sex to walk on the street hand in hand in the Arab world. While this is an indication of friendship and solidarity in Arabic culture, it is very uncommon in English society, except that the same-sex parties are homosexual partners. Similarly, it is common for several students of same sex to share one dormitory on Chinese university campuses whereas it is very rare for students of the same sex to do so on Australian university campuses. Apparently, nonverbal immediacy is viewed and managed differently and social practices in bodily proximity vary from culture and culture.

CONCLUSION

This chapter centers on the important role intercultural nonverbal communication plays in teacher-student classroom communication in multicultural Australian university context. With the white paper *Australia in the Asian Century* issued in 2012, Australia has been part of the great Pacific Rim and has strengthened its economic and diplomatic link with Asia as the center of the globe. Meanwhile, Australia's international education has been highly rated and has become a good example for some European universities to follow (Adams, 2007). In addition, Australia has remained one of the English-speaking destination countries where international students seek to further their higher education. Most of these young people come from Asian countries which are typical of collectivism in contrast to individualism which underlies the cultural values of Australian mainstream society. Such difference in cultural values highlights the orientation that members of collectivistic culture prefer indirect and nonverbal communication style in high context as opposed to direct and verbal communication style in low context practiced by members of individualistic culture.

While the above cultural diversity is beneficial in that it opens a wider window for members of the two broadly categorized cultures, it tests both parties' capacity to appreciate something different from their own culture. Intercultural nonverbal communication styles projected from different cultural values pose challenges to both Australian university staff members and international student cohorts. For Australia's international education to maintain sustainable development and growth, Australian universities would place themselves in a more competitive and advantageous position and would be more likely to succeed in

international education business if they provide their staff members with relevant intercultural communication training, including nonverbal communication skills (Chaney, 2014; Furnham & Petrova, 2010; Waistell, 2011). Furthermore, Australian university staff members and international students may find it beneficial to develop their intercultural knowledge and nonverbal interpersonal communication skills so that they can become broad-minded and understand each other better, hence building and maintaining sound teacher-student working relationships. This can make it possible for teachers to work more efficiently and to the best of their ability, showing interest in assisting each individual student with their learning needs. At the same time, international students need to make great efforts to work diligently and consciously, and to achieve the expected learning outcomes of university coursework or to complete planned higher degree research projects, making a good use of limited time to score maximum achievements, and achieving intercultural adaptation to Australian university environment and social life.

Intercultural nonverbal communication is a two-way ticket taking Australian universities, their staff members, and students, both international and domestic, to an upper level of win-win success. Classroom communication and student learning are enhanced and facilitated through teachers' effective use of nonverbal communication aided by a good understanding and intercultural awareness (Neill & Caswell, 1993; Quinlisk, 2008). As the English language is becoming a lingua franca, so are intercultural nonverbal communication styles and patterns, which requires Australian higher education practitioners to reflect on a new concept of intercultural nonverbal communication, that is integration of Australia' nonverbal communication style and pattern with those of international students', similar to what Alptekin (2002) argues in favor of intercultural communication competence in English language teaching. Facial expressions, like a smiling face, are a starting point where East meets West with mutual interest in knowing and understanding the others' languages and cultures. More Australian university members have friendly smiling photos on their staff profiles than their counterparts in the non-English background nations, but it is in the specific classroom and social interaction context that their intercultural nonverbal communication competence is put to test.

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Chapter 6

PHONE DURATION MODELING OF THE SERBIAN LANGUAGE: COMPARATIVE EVALUATION OF DIFFERENT MODELS

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ABSTRACT

Having in mind the importance of segmental duration from a perceptive point of view, a specialized module for modeling segmental duration in natural speech is a very important component of a text-to-speech (TTS) system in order to produce high quality synthetic speech which sounds natural. In this study various machine learning techniques were applied for phone duration modeling of the Serbian language. In this chapter different phone duration prediction models for the Serbian language using linear regression, tree-based algorithms and meta-learning algorithms such as additive regression, bagging and stacking algorithm are presented. Phone duration models have been developed for the full phoneme set of the Serbian language as well as for vowels and consonants separately. A large speech corpus and a feature set of 21 parameters describing phones and their contexts were used for the prediction of segmental duration. Phone duration modeling is based on attributes such as the current segment identity, preceding and following segment types, manner of articulation (for consonants) and voicing of neighboring phones, lexical stress, part-of-speech, word length, the position of the segment in the syllable, the position of the syllable in a word, the position of a word in a phrase, phrase break level, etc. These features have been extracted from the large speech database for the Serbian language. The phone duration model obtained using additive regression method outperformed the other models developed for the Serbian language within this study using different modeling techniques. This model obtained for the full phoneme set outperforms the second best model by approximately 1.3% and 1% in terms of the relative reduction of the root-mean-squared error and the mean absolute error, respectively.

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1. INTRODUCTION

In natural speech the duration of speech segments depends on the context of speech, where that dependence is very complex and involves many factors [1]. The study of speech timing and impact of different phonological, syntactic, physiological and other factors on the duration of speech segments is very important for both understanding the process of speech production and the development of speech synthesis in order to produce high quality synthetic speech [2], [3]. Therefore, a very important component of a text-to-speech (TTS) system is a specialized module (duration system) whose task is modeling segmental duration in natural speech, taking into account various factors. Identifying the most influential factors is a crucial step in the duration modeling process because selecting inadequate or incomplete sets of factors can lead to large errors of duration prediction. Having in mind the nature of the problem, a set of factors that describe the context of speech is composed of only those features that could be extracted from the text. The importance and effect of certain factors on the duration are directly correlated with a particular language and the sets of influential attributes vary considerably in different languages. The choice of this set requires a high level of linguistic information, as well as a statistical analysis of speech corpora in order to determine the accurate value of phone duration in a given language, having in mind the importance of the duration of speech segments from the perceptual point of view [4], [5].

Models for predicting the duration can be divided into two groups: rule-based models and corpus-based models. One of the most well known models for predicting duration using rules, and the oldest one, was developed by Dennis Klatt [1]. In this type of model, there is an assumption that each phoneme has an intrinsic duration which is inherently one of the distinctive features of phonemes. The intrinsic duration is assigned to a given segment and it is then modified by applying successive rules. In this type of duration system an occurrence of exceptions usually represents a problem because the rules are such that they most often lead to over-generalization. The main advantage of such models is that they do not require large speech corpora, which was of great importance at the time of their creation, when computational resources needed for generating and analyzing large speech corpora were not available as today.

However, by the development of computer technology, corpus-based models are becoming more prevalent. Corpus-based statistical models require a large speech corpus because the modeling is done using a machine learning algorithm on large speech corpora. Depending on machine learning approach applied for phone duration modeling, van Santen [5] distinguishes three types of models:

- linear statistical models,
- models obtained using a neural network and
- models based on decision trees.

The first such model for predicting the duration of speech segments in American English was developed by Riley [6] using the CART (Classification and Regression Trees) technique. The technique developed as a combination of statistics and artificial intelligence has many advantages and as such today represents one of the most commonly used methods for modeling the duration of speech segments. One of the main advantages of the CART method

is the ability to find out structural relationships between the predicted and actual values [7]. This is the reason why the CART method is commonly used in the initial stages of phone duration modeling research. The application of this method for modeling phone duration in different languages has given sufficiently good results. Phone duration modeling using the CART method has been implemented for many languages, including Czech [8], Greek [9]-[11], Lithuanian [12], Mandarin, British English, Vietnamese, Serbo-Croatian [13], Serbian [14], Korean [15], Turkish [16], and Indian languages Hindi and Telugu [17].

In addition to phone duration models based on decision trees, various machine learning approaches have been applied for modeling phone duration in different languages such as artificial neural networks [18], [19], sum of products models [2], Bayesian networks [20], and instance-based algorithms [21].

In this chapter the authors present different phone duration prediction models developed for the Serbian language using linear regression, tree-based algorithms and meta-learning algorithms such as additive regression, bagging and stacking algorithm. The performances of these models are evaluated by objective measures such as root-mean-squared error (RMSE), mean absolute error (MAE) and correlation coefficient (CC). The comparative evaluation of different models developed for the Serbian language is also performed. The results obtained for the full phoneme set of the Serbian language as well as for vowels and consonants are shown and discussed.

In the Introduction the authors present an overview of different approaches to duration modeling, emphasizing in particular the significance of phone duration modeling in speech synthesis. Section II gives the description of the speech database used for extracting a feature set and modeling phone duration as well as a detailed description of the feature set for the Serbian language. Phone duration modeling process using different algorithms is described in Section III. In Section IV experimental results are shown and discussed. Finally, conclusions and further research directions are given in Section V.

2. FEATURE SET FOR THE SERBIAN LANGUAGE

In the duration modeling process a necessary component of a TTS system, which precedes the module for predicting the duration of a speech segment in a given context, is a module that automatically generates the appropriate feature vector that represents each phoneme in the speech database. The elements of the vector describe the characteristics of the speech segment and the context in which it is located, where the value of each feature is actually one of the possible levels of the factors that influence the duration of the speech segment.

If the speech segment in the database is represented by the corresponding feature vector f , and if factor f_j indicates the presence of lexical accent in a syllable and it takes one of mutually exclusive values from the set {stressed, unstressed}, then the feature vector element has one of the possible values of the factor f_j . The space of all factors product $f_1 \times f_2 \times \dots \times f_n$ is called the feature space $\mathbf{F}$. However, due to the different phonological and other linguistic limitations, not all combinations of different factor values are allowed in any language. Therefore, the linguistic space is defined only by the feature vectors that really

occur in a particular language. It is significantly smaller than the feature space and it represents a subset of feature space. On the other hand, the number of possible linguistic combinations of different factor values in any language is extremely large and the recording of such a speech corpus exceeds reasonable time limitations [2]. Thus, when selecting material for speech database recording a lot of attention is focused on finding material that will contain as many different potential linguistic combinations as possible, in order to achieve the highest possible coverage of linguistic space. Despite all the efforts, the speech corpus is often only a small subset of linguistic space [22].

The factors which will be taken into account when developing a model of phone duration in speech synthesis in the Serbian language were selected on the basis of the most influential factors that different authors used for phone duration modeling in different languages [1], [8]-[17] and on the basis of previous studies concerning the effect of various factors on the duration of phonemes in the Serbian language [23], [24]. All the factors, which will be mentioned later, have been extracted from the speech database in the Serbian language, recorded for the needs of the existing speech synthesizer [25]. The aforementioned corpus used in this paper contains approximately 2000 sentences and 16000 words, and the majority of its contents are texts from the daily press, which are typically used for such purposes. The speech database was recorded in a sound proof studio and the voice of a female professional radio announcer was employed. She is a native speaker of Serbian, who speaks the Ekavian standard dialect. The recorded speech was sampled at 88.2 kHz. The recorded material was annotated phonetically and prosodically. The AlfaNumASR speech recognition system [26] was used for temporal alignment on the phonetic level and the correction of phone labels was carried out manually using the AlfaNum TTSTLabel software [26]. The prosodic annotation involved marking lexical stress (four stress types and post-accentual length), sentence focus and phrase break levels. The prosodic annotation was conducted manually using the AlfaNum TTSTLabel software [26].

Each phoneme in the speech database is presented using the appropriate feature vector which describes the given speech segment and the context in which the phoneme occurs. In addition, the relevant factors and their potential values in the Serbian language are given. The factors are classified according to the domain of their impact.

• Nature of the segment

segment identity: It can be one of 43 different values, including the five vowels in the Serbian language, two different realizations of schwa /ə/ and 25 consonants. Since stops and affricates are labeled in the database as pairs of semi-phonemes that consist of occlusions and explosions in the case of stops and of occlusions and frictions in the case of affricates, the total number of different consonants is therefore 36. Distinction is made between two different types of the semi-phone /ə/ - one that accompanies the phoneme /r/ in consonant environments, and the other in its syllabic use [27]. If used as a syllabic consonant, phoneme /r/ may be a syllable nucleus and that realization of the vocalic element /ə/ should differ from that in which /r/ is not the nucleus of a syllable.

segment type: vowel, consonant

manner of articulation (for consonants): stop, fricative, affricate, nasal, lateral, semivowel, trill

place of articulation (for consonants): bilabial, labio-dental, dental, postdental, alveolar, palatal, velar

- **Neighboring segments**

segment type: vowel, consonant, silence

manner of articulation (for consonants): stop, fricative, affricate, nasal, lateral, semivowel, trill

voicing: voiced, voiceless

Place of articulation of the preceding and following consonant is not considered because previous studies have shown that it is not a relevant factor [28].

- **Position of segment in syllable**

syllable initial: yes, no

position in a syllable: onset, nucleus, coda

- **Syllable**

lexical stress: stressed, unstressed

stress type: short-fall, long-fall, short-rise, long-rise, post-accentual length

- **Position of syllable in word**

word initial: yes, no

word final: yes, no

- **Word**

part of speech:

– inflected words: noun, verb, adjective, pronoun, number

– indeclinable words: preposition, adverb, conjunction, particle, exclamation

word length: the number of syllables in the phonological word

- **Focus**

focus: particularly highlighted word, relatively unimportant word, neutral word

- **Position of word in phrase**

break level: no break, weak break, medium break, strong break, hesitation break, sentence end break

The different break levels correspond to different perceptually detected breaks, in the cases where the break coincides with the interval of silence, it is possible to distinguish between initial, medial and final position of a word in the phrase.

3. PHONE DURATION MODELING USING MACHINE LEARNING ALGORITHMS

In the process of phone duration modeling of the Serbian language various machine learning techniques were used including linear regression, tree-based methods and meta-learning algorithms such as additive regression, bagging and stacking algorithm. In the following a brief description of the above mentioned methods is given.

Linear regression [29] is one of the methods used for the prediction of numerical values. This very simple method is also the oldest method of regression analysis. It has been extensively studied for many years and it is extensively used in many practical applications. The basic idea of this algorithm is that the dependent variable or predictive value is to be presented as a linear combination of attributes which will be taken into account when forming a predictive model and upon which the predictive value depends. Each of the attributes is weighted by the appropriate weighting factor.

Therefore, the dependent variable can be written as:

$$x = w_0 + w_1 a_1 + w_2 a_2 + \dots + w_k a_k \quad (1)$$

where: x is the predictive value or the phone duration in the case of duration modeling

$a_1, a_2, \dots, a_k$ are the factors affecting the duration of phonemes

$w_0, w_1, \dots, w_k$ are weighting factors

The weighting factors are determined based on the training data, which are in the speech database.

The predicted value of the duration for the first phoneme in the database can be written as:

$$x = w_0 a_0^{(1)} + w_1 a_1^{(1)} + w_2 a_2^{(1)} + \dots + w_k a_k^{(1)} = \sum_{j=0}^k w_j a_j^{(1)} \quad (2)$$

In determining the coefficients w_j , there are $k+1$ of them, the method of the least squares is applied, and it is necessary to minimize the sum of squares of the differences between the actual and the predicted values over all the training data.

If there are n phones in the database, wherein the i -th phoneme denoted with superscript (i) then the sum of the squares of the differences can be represented as:

$$\sum_{i=1}^n (x^{(i)} - \sum_{j=0}^k w_j a_j^{(i)})^2 \quad (3)$$

where the difference in parenthesis is the difference between the actual and the predicted value of the duration of the i -th phoneme in the database. By choosing appropriate coefficients w_j the sum of squares is minimized.

CART method [7], developed as a combination of statistics and artificial intelligence, has a number of advantages and, as such, today is one of the most commonly used methods for modeling the duration of speech segments. Modeling speech segments duration using the CART technique involves the use of a regression tree for predicting the duration of a given

speech segment which is in the database represented by a corresponding feature vector. The formation of the tree consists of several steps: the formation of the question set and selection of the best question for splitting in the given node; selection of stopping criterion in a node, or declaration of a given node as a terminal node (leaf); prediction of a value in a given node.

The most popular splitting criterion is the mean squared error. Suppose Y is the actual duration for training data X , and then the overall prediction error for a node t can be defined as:

$$E(t) = \sum_{\mathbf{X} \in t} |Y - d(\mathbf{X})|^2 \quad (4)$$

where $d(\mathbf{X})$ is the predictive value of Y .

The next step is the selection of the best question which is equivalent to finding the best split for the instances of the node. We should find the question with the largest squared error reduction or the question q^* that maximizes:

$$\Delta E_q(t) = E(t) - (E(l) + E(r)) \quad (5)$$

where l and r are the leaves of the node t . We define the expected square error $V(t)$ for a node t as the overall regression error divided by the total number of instances in the node:

$$V(t) = E \left(\sum_{\mathbf{X} \in t} |Y - d(\mathbf{X})|^2 \right) = \frac{1}{N(t)} \sum_{\mathbf{X} \in t} |Y - d(\mathbf{X})|^2 \quad (6)$$

One can notice that $V(t)$ is actually the variance estimate of the duration if $d(\mathbf{X})$ is made to be the average duration of instances in the node. With $V(t)$, we can define the weighted squared error $\bar{V}(t)$ for a node t as follows:

$$\bar{V}(t) = V(t)P(t) = \left(\frac{1}{N(t)} \sum_{\mathbf{X} \in t} |Y - d(\mathbf{X})|^2 \right) P(t) \quad (7)$$

Finally, the splitting criterion can be rewritten as:

$$\Delta \bar{V}_t(q) = \bar{V}(t) - (\bar{V}(l) + \bar{V}(r)) \quad (8)$$

Regression tree is formed by splitting each node until either of the following conditions is met for a node:

The greatest variance reduction of the best question falls below a pre-set threshold α :

$$\max_{q \in Q} \Delta \overline{V}_t(q) < \alpha \quad (9)$$

The number of instances falling in the leaf node t is below a threshold β .

When a node cannot be split further, it is declared a terminal node. The tree building algorithm stops when all nodes are terminal.

Regression tree is a special case of model tree. The only difference between regression tree and model tree is that for model tree each node contains a linear regression model based on some of the attribute values instead of a constant value. Linear regression model predicts the value for the instances that reach the leaf.

In addition to regression and model trees in the process of duration modeling another algorithm based on decision trees could be used. This is the REP (Reduced Error Pruning) Trees algorithm [21] developed in order to obtain the optimal tree, which means finding a minimum tree size while achieving a minimum error. In this algorithm different sets of data are also used for forming and pruning the tree, wherein the mutual ratio of the amount of data of these two sets is one of the parameters of the algorithm.

The basic idea of using meta algorithms is to make more reliable decisions by combining the output of different models [29]. There is no generally accepted preferable way of combining multiple models, so many different variations can be applied. These algorithms often contribute to the improvement of the predictive performance over a single model taking into account the observation that different algorithms perform differently in different situations. In the case of phone duration modeling, different individual phone duration models will produce different errors and the meta learning algorithm, which combines the predictions of individual models in an appropriate way, could compensate for some of these errors. Therefore, meta learning technique will contribute to the increase of the overall phone duration prediction accuracy [29].

Stacked generalization or stacking is one of the meta learning algorithms invented by David Wolpert [29]. It presents a possible way of combining multiple models of different types. Stacking introduces the concept of a metalearner. The metalearner is a learning algorithm which tries to discover how best to combine the output of the base learner or level-0 learner.

General structure of the stacking algorithm is shown in Figure 1. As one can notice in the figure, the input to the level-1 model consists of the predictions of the level-0 models. A level-1 instance has as many attributes as there are level-0 models, and the attribute values give the predictions of the base learners on the corresponding level-0 instance. The method of cross validation is usually applied for every level-0 learner, ensuring that the level-1 learner uses a full set of training data.

Numerous machine learning methods can be applied for training the level-1 model. Because most of the work is done by the level-0 models, the level-1 learner may be a simple algorithm such as a linear regression or model tree. Different machine learning techniques which are used as a level-0 learner or level-1 learner such as linear regression, model tree, CART (Classification and Regression Trees) and REP (Reduced Error Pruning) Tree were described briefly in the previous paragraphs.

Additive regression [30] is one of the meta algorithms whose application could improve the performance of standard regression techniques. This improvement is achieved by generating predictions by summing up the contributions of individual models and trying to

form an ensemble of individual models which optimizes predictive performance according to some specified criterion. In the training phase, in each iteration, a standard regression tree is formed using the residuals of the tree from the previous iteration as the training data. In the case of duration modeling the residuals represent the prediction errors, i.e., the differences between the actual and predicted values of the phone durations. In each iteration, prediction of residuals from previous iteration is performed and thus automatically the error from the previous iteration is reduced. The user-specified parameters are the maximum number of iterations and shrinkage parameter which determines the run time. The parameter α is user-specified constant value between 0 and 1 which is multiplied by the prediction value before subtracting. This reduces the model's fit to the residuals and consequently reduces the chance of overfitting. In this way, of course, the number of iterations required for the obtaining an optimal model increases.

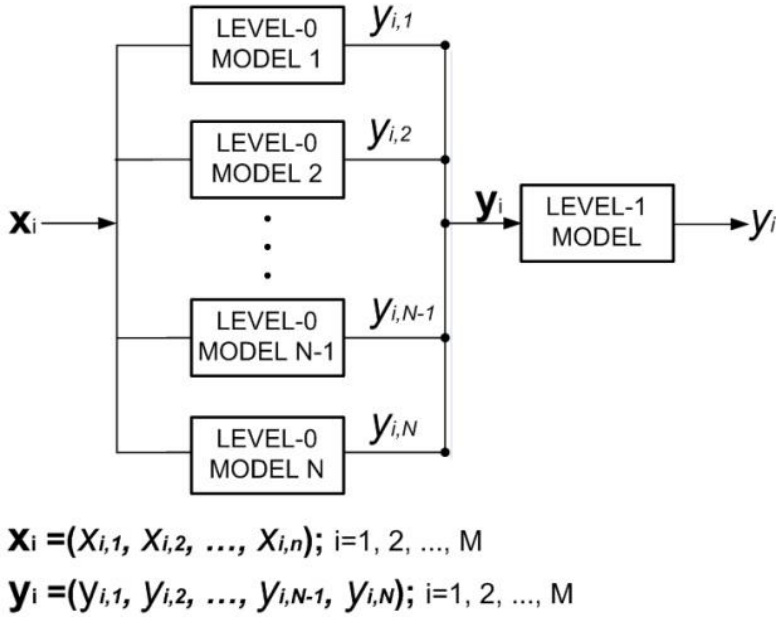


Figure 1. General structure of stacking algorithm.

Bagging or bootstrap aggregating algorithm [31] is also one of the meta algorithms that can be applied for modeling the phone durations. This algorithm is based on a combination of predictions that give different individual models, and the final predicted value represents the mean value of the individual predictions of each model. The general structure of the algorithm is shown in Figure 2. Total number of individual models is the parameter that user specifies in advance. Each model was developed using a different training set, which is the same size as the original data set and obtained by selecting data from the original set in a random manner. Therefore, it is possible that some of the instances is repeated several times in the new data set while others can be omitted. It can be shown theoretically that averaging over multiple models developed from independent training sets always reduces the expected value of the mean-squared error [29].

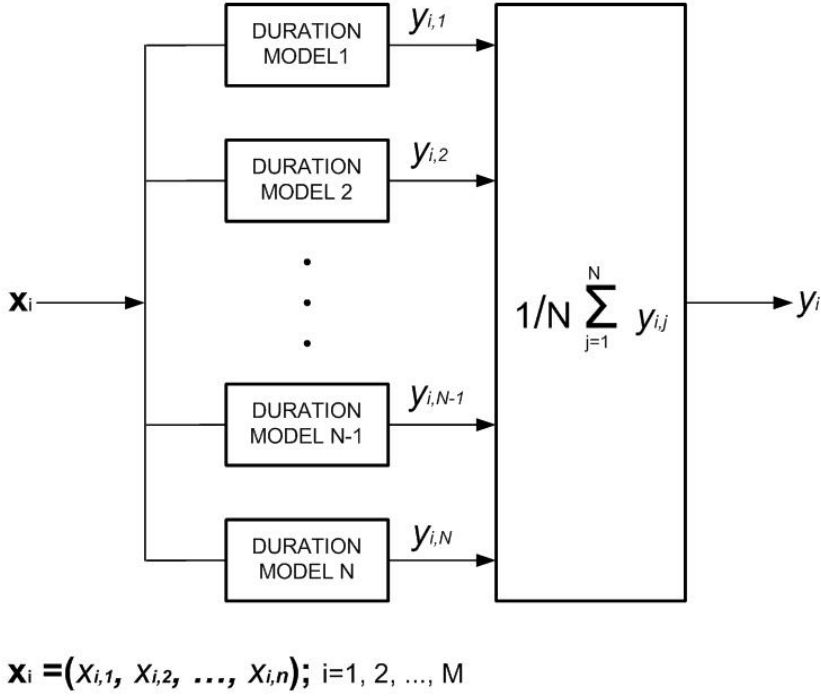


Figure 2. General structure of bagging algorithm.

4. EXPERIMENTAL RESULTS

In this chapter duration models have been developed with LinearRegression (LR), M5P (model tree), M5PR (regression tree), REPTree with and without pruning, AdditiveRegression(AR), Bagging (BAG), and Stacking (STACK) algorithms of WEKA [32]. These algorithms have been used for training the models on a large speech corpus which contains 98214 phonemes including 38543 vowels and 59671 consonants. SAMPA symbols of phonemes and the number of their occurrences in the speech database for the Serbian language are shown in Figure 3. Phone duration models have been developed for the full phoneme set of the Serbian language as well as for vowels and consonants separately. 10-fold cross-validation procedure has been used to evaluate phone duration models. The evaluation of the duration models developed is carried out using objective measures such as root-mean-squared error (RMSE), correlation coefficient (CC) and mean absolute error (MAE) between the predicted and the actual durations of phones. Prediction performance of each model is also evaluated on unseen (new) data which were not used in the training phase. In this experiment, the whole database was split into two subsets: the training set and the test set. The training set contains 80% of the database and the remaining 20% instances constitute the test set.



In Figures 4, 5 and 6 RMSE, MAE and CC of all models developed for the full phoneme set in the Serbian language are shown by histograms. One can notice that AR REPTree model has achieved the best predictive performance. REPTree algorithm as the basic algorithm in AdditiveRegression gives better results than M5PR algorithm, while it was shown that the M5PR algorithm is better as basic algorithm than REPTree in Bagging algorithm. Also, one can notice that models obtained using any of the meta algorithms have better performance than the LR model or tree-based models. One can also notice that the performances of M5PR model are slightly worse than the performance of M5P model.

Table 1. Predictive performances of duration models for the full phoneme set (two different test modes)

Duration model (test mode)	RMSE [ms]	MAE [ms]	CC
LR (cross-validation)	20.8834	15.7481	0.8203
LR (20% test set)	20.8554	15.7226	0.8224
M5P (cross-validation)	15.5579	11.4724	0.9047
M5P (20% test set)	15.5996	11.4915	0.9050
M5PR (cross-validation)	15.8307	11.6490	0.9012
M5PR (20% test set)	15.9160	11.7058	0.9008
REPTree no prun. (cross-validation)	16.5317	12.0729	0.8917
REPTree no pruning (20% test set)	16.7069	12.1194	0.8901
REPTree (cross-validation)	16.7414	12.2118	0.8887
REPTree (20% test set)	16.8716	12.3388	0.8878
AR M5PR (cross-validation)	14.9304	11.0889	0.9126
AR M5PR (20% test set)	15.0027	11.1303	0.9125
AR REPTree (cross-validation)	14.8884	11.0655	0.9131
AR REPTree (20% test set)	14.9191	11.0746	0.9135
BAG M5PR (cross-validation)	15.5257	11.4526	0.9052
BAG M5PR (20% test set)	15.6014	11.4905	0.9050
BAG REPTree (cross-validation)	16.5482	12.0850	0.8914
BAG REPTree (20% test set)	16.7044	12.2007	0.8902
STACK M5P (cross-validation)	15.1423	11.2010	0.9100
STACK M5P (20% test set)	15.3170	11.3226	0.9085

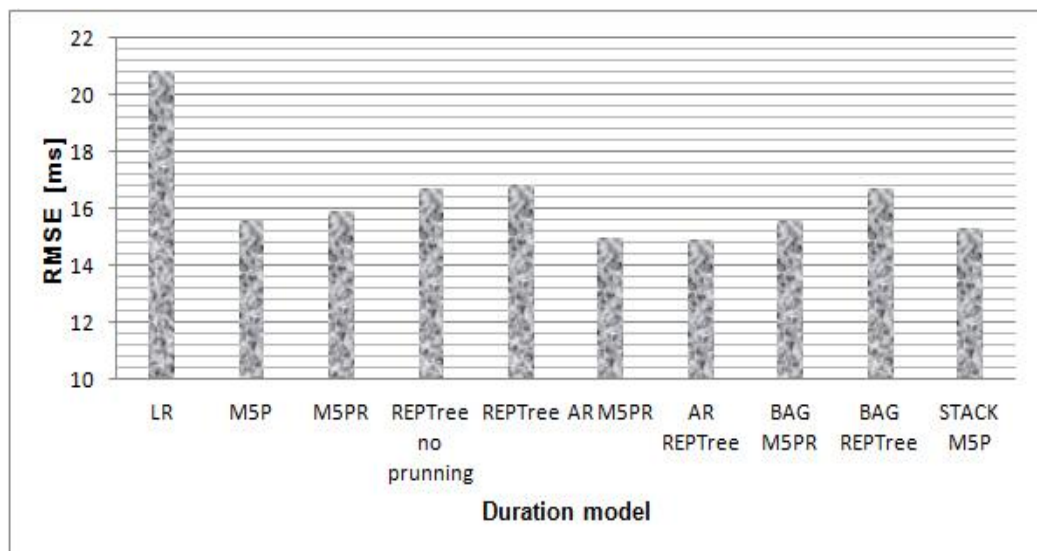


Figure 4. Root-mean-squared error for different duration models.

This is a very important fact because the application of M5PR model for the prediction of phone duration reduces prediction time even though the number of terminal nodes is larger than in the case of prediction by M5P model, considering the leaves of the tree contain a

constant value which is the predicted value of a given phoneme. It can be observed that the LR model has the worst performance in terms of all three quantitative measures.

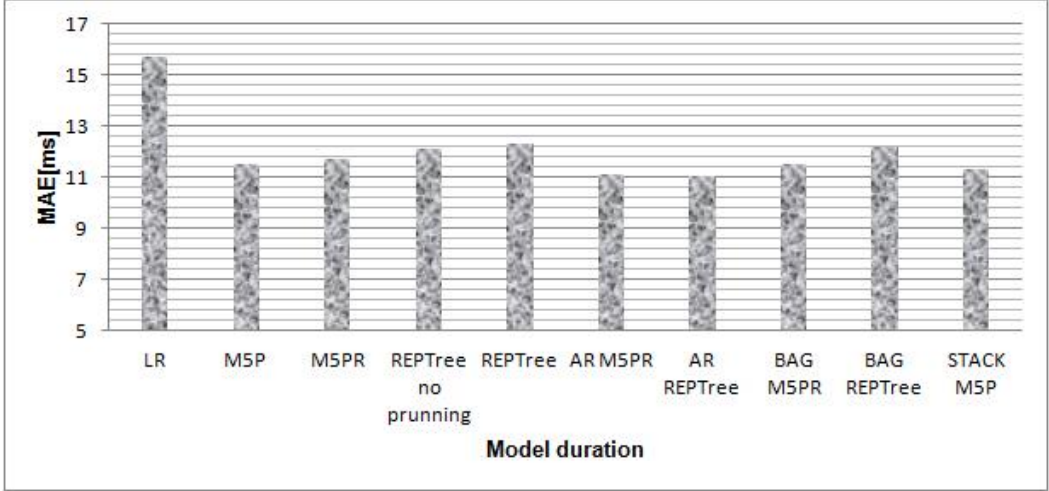


Figure 5. Mean absolute error for different duration models.

Tables II and III show the values of RMSE, MAE and CC for consonant and vowel duration models, respectively. The training set is used for developing the duration models and the evaluation of the model performances is carried out on the test set. The total number of consonants in the training and test sets is 47737 and 11934, respectively. The total number of vowels in the training and test sets is 30835 and 7708, respectively. Performances of these models are comparable with the prediction performance of models obtained for the full phoneme set. Consonant duration models have achieved RMSE from 13.8348 to 16.6662 ms, MAE from 10.1952 to 12.1044 ms and CC from 0.8276 to 0.8833. Vowel duration models have achieved RMSE from 16.1226 to 19.9038 ms, MAE from 12.2446 to 15.3706 ms and CC from 0.8412 to 0.899. Consonant duration model developed using AdditiveRegression algorithm has the best performance, but in this case better results are obtained when the M5PR algorithm is used as the basic algorithm. AR REPTree vowel duration model has the best predictive performance. Using of linear regression when developing consonant duration models as well as vowel duration models also gives the worst results.

In order to improve the model performances obtained the outliers of the speech database have been removed and a new range of phone durations was obtained. This new range of durations contains 96.27% of the data for the full phoneme set and it was obtained considering the distribution of durations and the number of instances which have extremely small or extremely large durations near the boundary values of the duration range, i.e., around 2 and 290 ms (Figure 7). Phone duration distribution after removing the outliers is shown in Figure 8. The distribution of phone durations in the speech database used approximates gamma distribution. Model performances obtained for the full phoneme set after removing the outliers are given in Table 4.

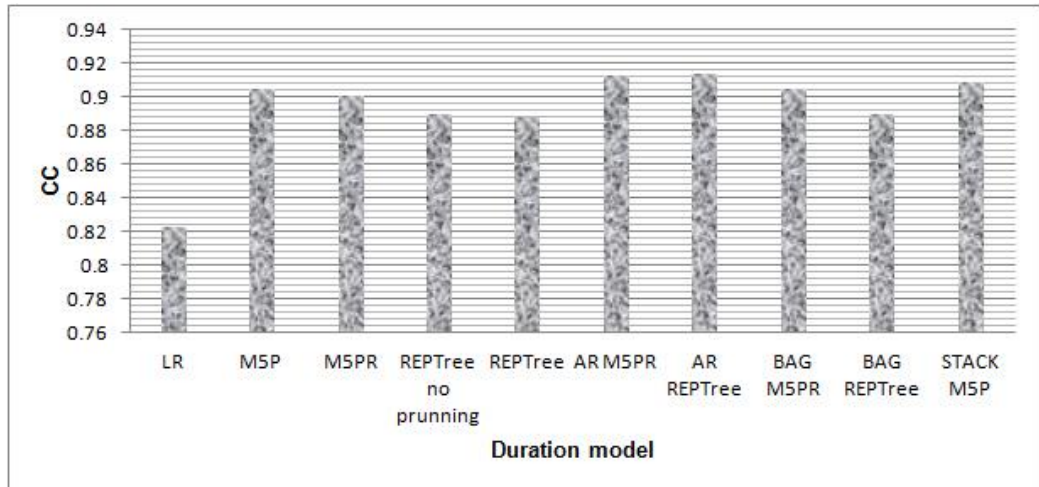


Figure 6. Correlation coefficient for different duration models.

Table 2. Predictive performances of consonant duration models

Consonant Duration Model	RMSE [ms]	MAE [ms]	CC
LR	16.5562	12.1044	0.8276
M5P	14.0769	10.3277	0.8788
M5PR	14.4826	10.5714	0.8712
REPTree	15.1510	10.9402	0.8580
REPTree no pruning	15.0603	10.8792	0.8598
AR M5PR	13.8348	10.1952	0.8833
AR REPTree	13.9699	10.2276	0.8707
BAG M5PR	14.1849	10.3873	0.8770
BAG REPTree	14.9614	10.8181	0.8618
STACK M5P	14.0370	10.2833	0.8795

Table 3. Predictive performances of vowel duration models

Vowel Duration Model	RMSE [ms]	MAE [ms]	CC
LR	19.9038	15.3706	0.8412
M5P	16.6933	12.7239	0.8913
M5PR	17.2721	13.1076	0.8844
REPTree	17.8045	13.4284	0.8752
REPTree no pruning	17.6018	13.2887	0.8783
AR M5PR	16.5193	12.5885	0.8938
AR REPTree	16.1226	12.2446	0.8990
BAG M5PR	16.8572	12.7740	0.8891
BAG REPTree	17.5142	13.2146	0.8795
STACK M5P	16.6730	12.6544	0.8916

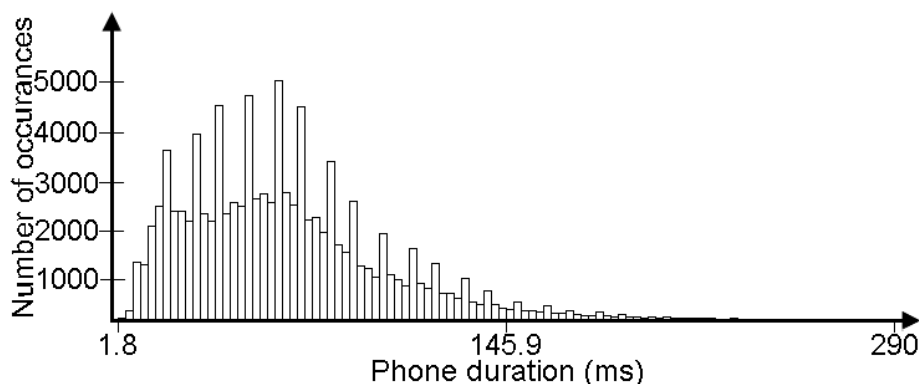


Figure 7. Phone duration distribution before removing the outliers.

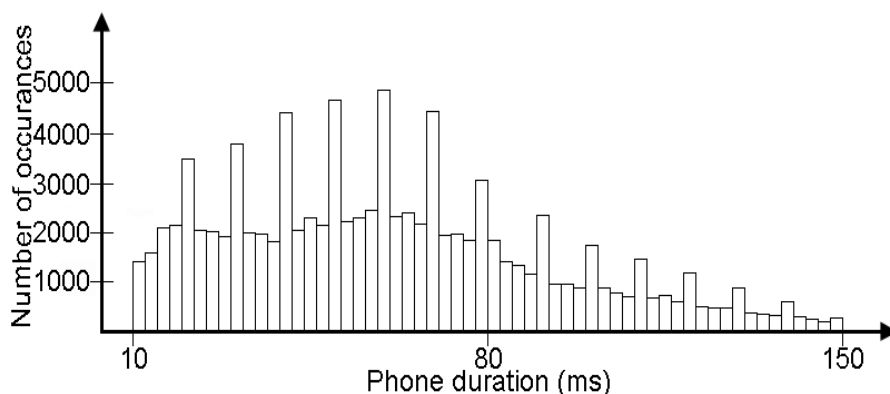


Figure 8. Phone duration distribution after removing the outliers.

Table 4. Predictive performances of duration models for the full phoneme set after removing the outliers

Duration Model	RMSE [ms]	MAE [ms]	CC
LR	18,0529	13,9174	0,8170
M5P	14,6028	10,9763	0,8845
M5PR	14,8914	11,1947	0,8796
REPTree	15,6526	11,7379	0,8660
AR REPTree	14,1246	10,6840	0,8924
BAG M5PR	14,6211	11,0218	0,8843
STACK M5P	14,3118	10,7948	0,8894

In Figures 9, 10 and 11 histogram shows quantitative measures RMSE, MAE and CC obtained for the full phoneme set after removing the outliers. Based on the results obtained it can be seen that the AR REPTree model developed for the full phoneme set has again the best predictive performance. This model outperforms the second best model by approximately 1.3% and 1% in terms of relative reduction of the root-squared error and mean-absolute error, respectively. By applying linear regression method the worst performance model is obtained.

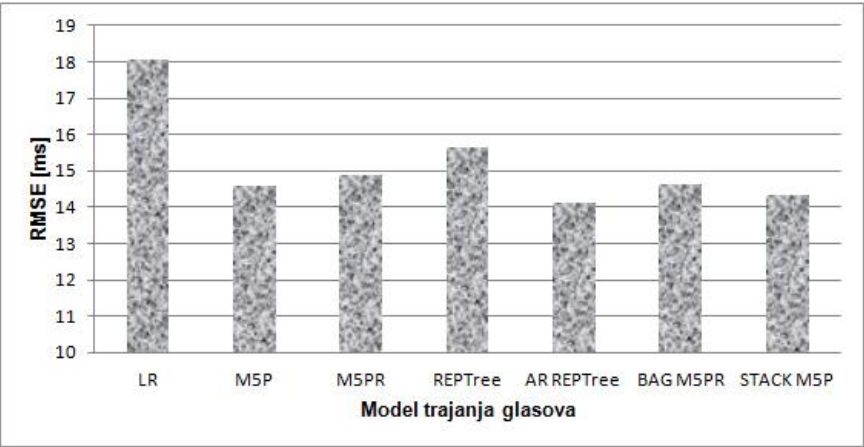


Figure 9. Root-mean-squared error for different duration models after removing the outliers.

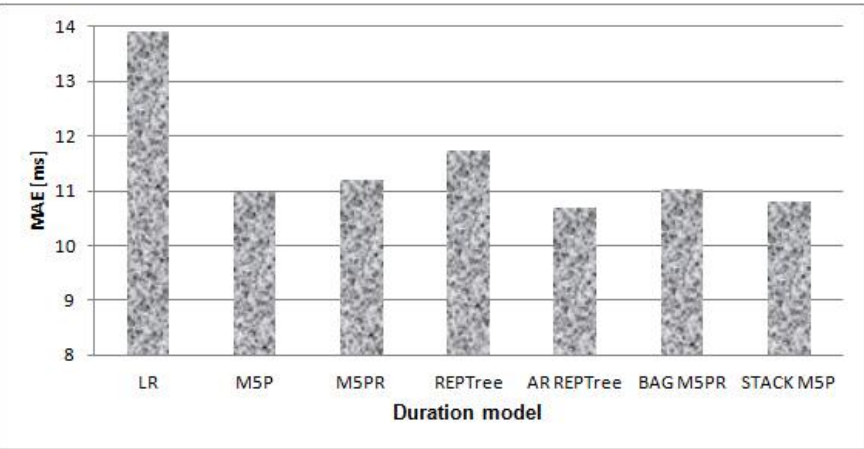


Figure 10. Mean absolute error for different duration models after removing the outliers.

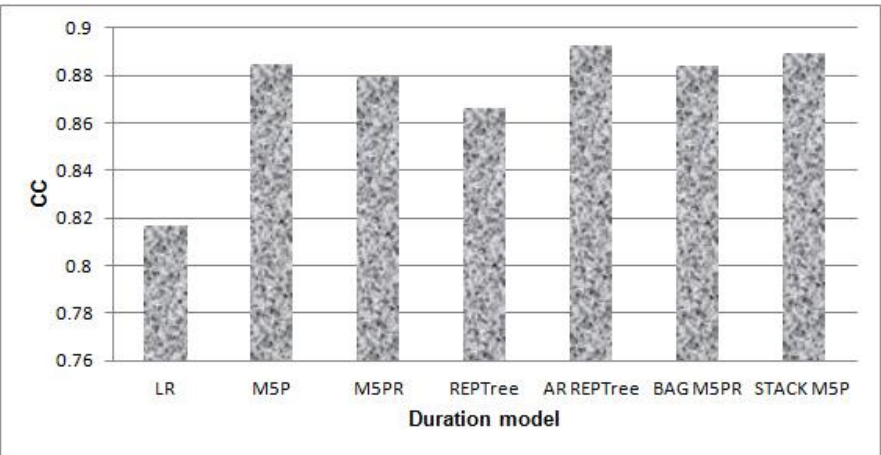


Figure 11. Correlation coefficient for different duration models after removing the outliers.

The values of RMSE, MAE and CC obtained for consonant and vowel duration models after removing the outliers are given in Table 5 and Table 6. In Figures 12, 13, 14, 15, 16 and 17 histograms present quantitative measures of these models that were obtained by removing from the speech database consonants or vowels which are located near the boundary values of the duration range. It can be seen that the application of AR REPTree algorithm, in both cases, gives the best predictive performance model, while the use of linear regression gives the worst performance models.

Table 5. Predictive performances of consonant duration models after removing the outliers

Consonant Duration Model	RMSE [ms]	MAE [ms]	CC
LR	15.5774	11.5999	0.8257
M5P	13.6274	10.0956	0.8698
M5PR	13.8944	10.2746	0.8643
REPTree	14.4790	10.6440	0.8516
AR REPTree	13.3149	9.9282	0.8762
BAG M5PR	13.6516	10.1497	0.8695
STACK M5P	13.5288	10.0532	0.8718

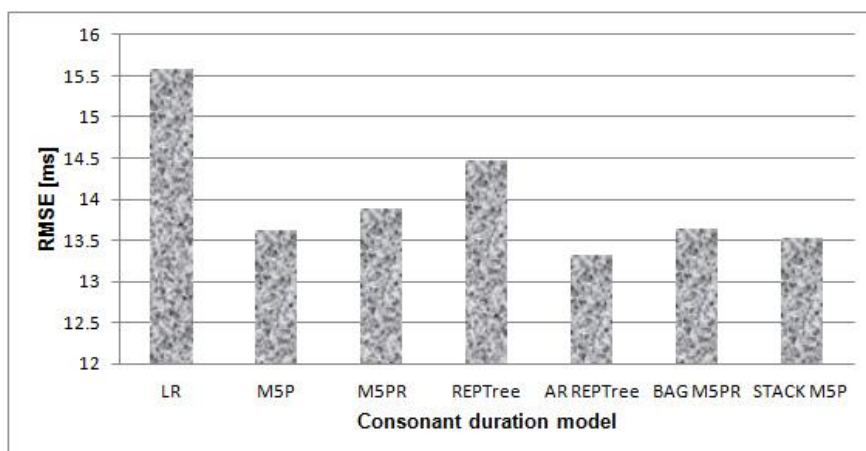


Figure 12. Root-mean-squared error for consonant duration models after removing the outliers.

Table 6. Predictive performances of vowel duration models after removing the outliers

Vowel Duration Model	RMSE [ms]	MAE [ms]	CC
LR	17.0795	13.5574	0.8223
M5P	15.7466	12.1199	0.8710
M5PR	16.2816	12.5345	0.8615
REPTree	16.4006	12.5757	0.8374
AR REPTree	15.4433	11.8954	0.8763
BAG M5PR	16.0174	12.3217	0.8666
STACK M5P	15.7223	12.0820	0.8714

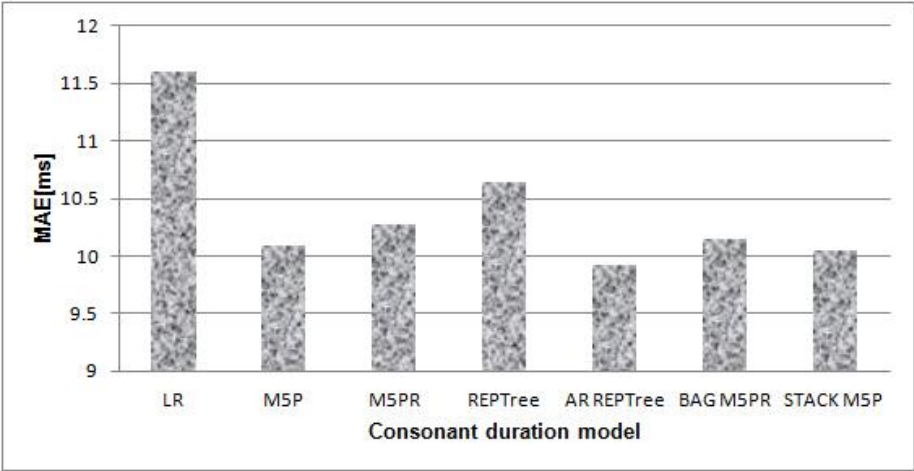


Figure 13. Mean absolute error for consonant duration models after removing the outliers.

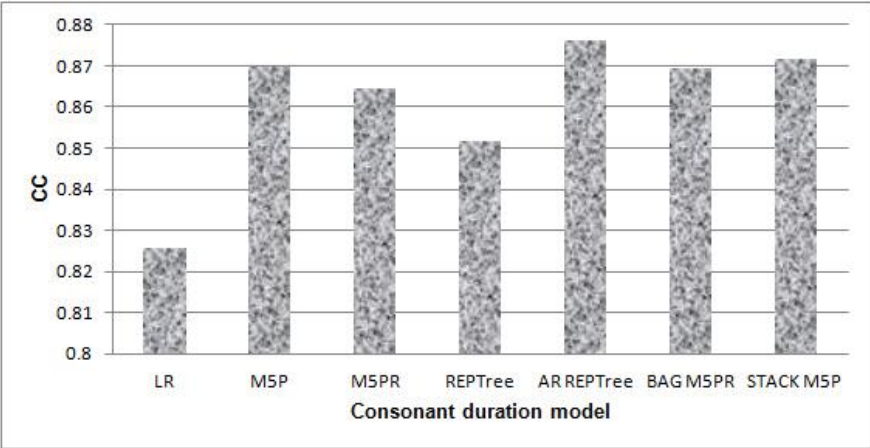


Figure 14. Correlation coefficient for consonant duration models after removing the outliers.

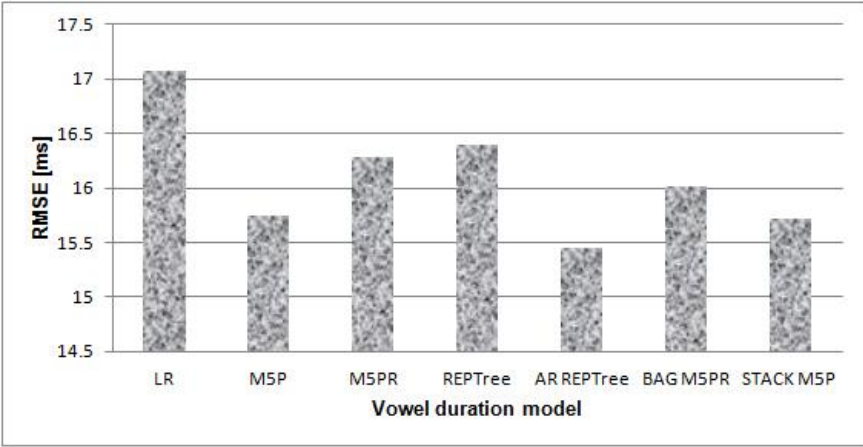


Figure 15. Root-mean-squared error for vowel duration models after removing the outliers.

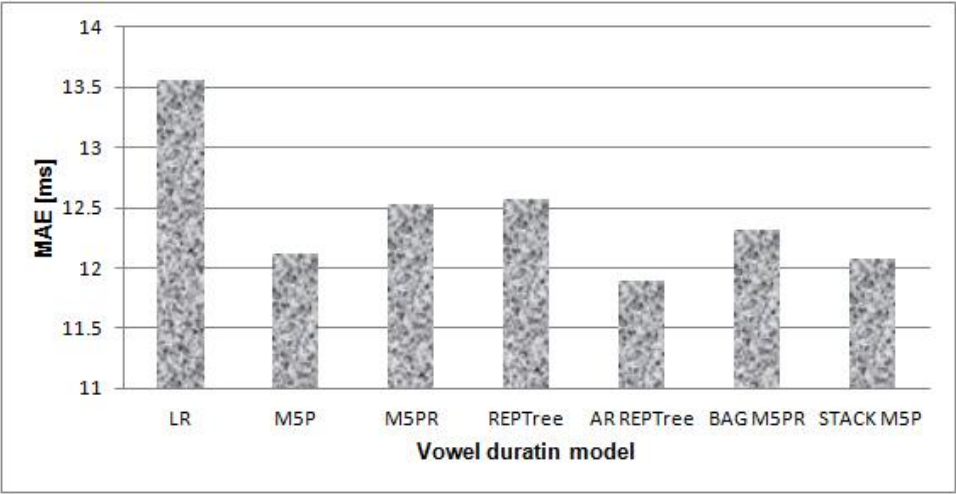


Figure 16. Mean absolute error for vowel duration models after removing the outliers.

Table 7 shows the percentage of RMSE improvement yielded by removing the outliers. Based on these results it can be observed that RMSE decrease for the full phoneme set is in the range from 5.13% to 13.44%, for consonants from 3.12% to 5.91% and for vowels from 4.21% to 14.19%. Also, it can be seen that AR REPTree duration model and AR REPTree vowel duration model have the smallest decrease of RMSE in percentages. These models also represent the best predictive performance models. M5PR consonant duration model achieves the smallest percentage of RMSE decrease after removing the outliers. On the other hand, the LR model that represents the worst performance model achieves the biggest decrease of RMSE in percentages after removing the outliers for the full phoneme set as well as for consonants and vowels.

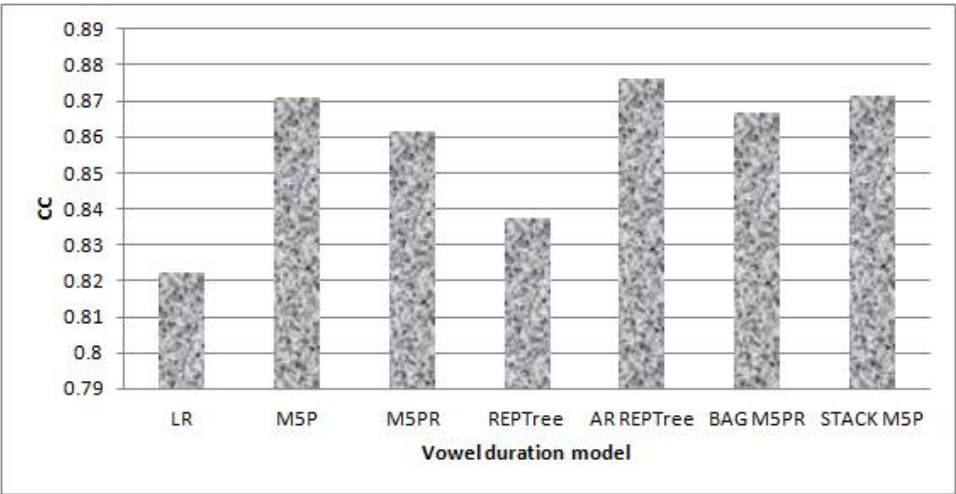


Figure 17. Correlation coefficient for vowel duration models after removing the outliers.

Table 7. Percentage of RMSE improvement after removing the outliers for different sets

Duration Model	Phonemes	Consonants	Vowels
LR	13.44%	5.91%	14.19%
M5P	6.39%	3.19%	5.67%
M5PR	6.43%	3.12%	5.50%
REPTree	7.22%	4.43%	7.88%
AR REPTree	5.13%	4.69%	4.21%
BAG M5PR	6.28%	3.76%	4.98%
STACK M5P	6.56%	3.62%	5.70%

CONCLUSION

In this chapter different phone duration models for the full phoneme set as well as vowels and consonants of the Serbian language were presented. These models were developed using various machine learning techniques such as linear regression, tree-based algorithms and meta-learning algorithms. In the duration modeling procedure a large speech corpus containing 98214 phonemes was used. Removing of outliers was carried out in order to improve model performance. The objective evaluation of the models obtained for the Serbian language was performed. The quantitative measures obtained in terms of RMSE, MAE and CC show that AR REPTree model is the best predictive performance model for the full phoneme set as well as vowels and consonants.

In the future, we intend to implement the duration models developed in the speech synthesizer for the Serbian language [25] and to perform subjective evaluation tests of our duration models in order to estimate the quality of synthesized speech on the basis of qualitative measures such as naturalness and intelligibility of speech.

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Chapter 7

INFERENTIAL COMPREHENSION IN A DIALOGIC READING TASK: COMPARING 5-YEAR-OLD CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT TO TYPICALLY DEVELOPING PEERS

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ABSTRACT

Purpose: Inferential comprehension is an important aspect of language development in the early years and is strongly associated with future academic success. Yet, this language ability has not been extensively documented in young children with SLI. Information in that regard would be helpful in guiding assessment and intervention in speech-language pathology. This study aims to collect data on inferential abilities of 5-year-old children with SLI.

Methods: Sixty-four children, distributed in three groups, participated in the study: 16 children with SLI were compared to 26 age-matched and 22 language-matched typically developing children. Inferential abilities were examined with pre-determined questions inserted into a dialogic reading task. The performance of the three groups of children was compared according to the inference types and the quality of responses provided.

Results: Children with SLI obtained similar results to the younger language-matched group and weaker results than the age-matched group. Significant differences among the three groups were observed for both inference types and quality of responses.

Conclusions: This study provides new information about the inferential abilities of children with SLI and typically developing children aged 4 to 5 in the context of dialogic

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reading. The results offer some foundation for planning assessment and intervention in the area of inferential comprehension with young children.

Keywords: language comprehension, inferences, preschool children, specific language impairment

INTRODUCTION

Children with specific language impairment (SLI) “have a significant and longstanding deficit in spoken language ability that adversely affects their social and academic well-being” (Leonard, 2014). An important academic challenge for these children is learning to read including the various elements leading to and involved in reading comprehension (Catts, 2009; Gough & Tunmer, 1986; Nation & Norbury, 2005). In this chapter, we focus on a well-known precursor of reading comprehension, i.e., oral comprehension abilities (Cain & Oakhill, 2007). More specifically, this chapter examines inferential comprehension in young children with SLI.

Inferential comprehension is the ability to “read between the lines”, a process that integrates linguistic knowledge (words and grammatical rules) with the social and contextual knowledge of the person who interprets a message (Letts & Leinonen, 2001; Paul, 2000). Thus, inferential comprehension comes into play when one has to interpret information that is not explicitly presented (Adams, Clarke, & Haynes, 2009; Bishop, 1997; Botting & Adams, 2005; van Kleeck, 2008). Another characteristic of inferential abilities is that they tap into skills, such as working memory or executive functions (Adams et al., 2009; Norbury & Bishop, 2002), facilitating the link between language skills and world knowledge to understand the expectations, motivations and intentions of the speaker (Makdissi & Boisclair, 2006; Paul, 2000).

One of the challenges of studying inferential comprehension in young children is measuring it in a valid and reliable fashion. To that end, dialogic reading is the preferred methodology (Filiatrault-Veilleux, Bouchard, Trudeau, & Desmarais, accepted) because, when an adult shares a book with a child by telling the story and asking questions, it encourages the child’s participation and interest and stimulates comprehension of the story (Ford & Milosky, 2008; Makdissi & Boisclair, 2006; van Kleeck, Vander Woude, & Hammett, 2006; Wenner, 2004; Whitehurst & Lonigan, 1998). In this type of activity, the child’s inferential abilities support the construction of a coherent mental representation of the story based on the information provided and on links to the child’s world knowledge (Ford & Milosky, 2003; Joffe, Cain, & Maric, 2007). Furthermore, dialogic reading has been shown effective in promoting the development of inferential comprehension (van Kleeck et al., 2006) as well as contributing to language development as a whole (Price, van Kleeck, & Huberty, 2009). It allows young children to engage in the process of reading and to be active in the construction of the meaning of the story (Makdissi & Boisclair, 2006; van den Broek, Tzeng, Riden, Trabasso, & Basche, 2001). Consequently, dialogic reading is a facilitator of language development. It is therefore a concern that children with SLI are less exposed to language in the inferential context of dialogic reading than typically developing children (van Kleeck et al., 2006). Indeed, observations of dialogic reading show that parents of children with SLI do not optimally adjust their language to the level of language of their child (van

Kleeck, 2008). This is an observation that encourages the pursuit of investigating inferential comprehension in young children with SLI.

To read between the lines and understand a story, various types of inferences can occur. In this study, we focus on two categories of inferences (Table 1). The first category, called “causal inferences”, is considered obligatory and contributes to the comprehension of the causal structure of the story, i.e., the story grammar elements comprised of the setting, the initiating event, the problem, the goal, the internal response of the character, the attempts at solving the problem and the final solution (Mandler & Johnson, 1977; Stein & Glenn, 1979). This category of inference is hierarchically related to elements of story grammar (Kendeou, Bohn-Gettler, White, & van den Broek, 2008; Makdissi & Boisclair, 2006; van Kleeck, 2008). Inference types of this category can target the internal response or emotion of the character, the initial event, the problem, the attempts to solve the problem, the predictions of the next logical step of a sequence of events and the solution. The second category of inferences is not critical to story comprehension but contributes to enrich the representation of the story via connections made with knowledge of the world (Bowyer-Crane & Snowling, 2005). This category of inference is called “informational inference” or “inferences based on world knowledge” (Cain & Oakhill, 1999; van Kleeck, 2008). This second category allows children to make the connections between their own world knowledge and explicit information contained in a message. For example, informational inferences can target the setting of the story or the definition of new words. Both categories of inference (causal and informational inferences) play an important role in the construction of the mental representation of the story. In fact, the ability to make inferences is crucial in understanding a story. It develops prior to school entry and serves as an important foundation of reading comprehension in subsequent years (Filiatrault-Veilleux et al., accepted).

In children with SLI, early research about inferential comprehension studied school aged participants once they were already experiencing reading comprehension difficulties. The results showed that, when compared with typically developing (TD) peers, children with SLI have difficulty making inferences (Adams et al., 2009; Bishop, 1997; Botting & Adams, 2005; Bowyer-Crane & Snowling, 2005; Dodwell & Bavin, 2008; Ryder, Leinonen, & Schulz, 2008). For example, the results of children with SLI aged 6 to 11 years old are on par with those of younger TD children in tasks involving inferential language abilities (Adams et al., 2009; Bishop, 1997; Botting & Adams, 2005). According to Norbury and Bishop (2002), children with language problems rely on some inferential abilities, but they have difficulty making inferences that require linking the context and world knowledge. As inferential comprehension is a critical ability for subsequent development of reading comprehension (Bishop & Adams, 1990; Catts, 2009; Lynch & van den Broek, 2007; Serpell, Baker, & Sonnenschein, 2005), the presence of difficulties in understanding inferences is a risk factor for these children. Some authors suggest that for young children with SLI, these difficulties may be due to limits in accessing world knowledge or difficulties in comprehension of grammar rules that affect the processing/understanding of sentences (Adams et al., 2009; Bishop, 1997). According to Bowyer-Crane & Snowling (2005), this challenge could be greater for certain types of inferences that involve an interpretation based on world knowledge. Children’s performance could also be explained by a difficulty inhibiting information not relevant to meaning, a difficulty in constructing complete mental representations (Bishop, 1997; Ford & Milosky, 2008) or an inability to select relevant information to make an inference (Cain, Oakhill, Barnes, & Bryant, 2001).

Some studies also investigated inferential comprehension in younger children with SLI. In recent years, Ford and Milosky (2003, 2008) as well as Spackman, Fujiki and Brinton (2006) compared language impairment children to TD children on the ability to infer the internal response of characters. These studies concluded that, even in 4 to 6 year olds, and thus prior to school entry, children with language impairment have difficulty inferring the emotional response of the character in a story. It is also interesting to note that intervention targeting the comprehension of inferences has some positive effects. For instance, a study by van Kleeck and al. (2006) looked at the effect of book-sharing intervention on both literal and inferential comprehension of preschoolers aged 3 to 5. These children, with identified language impairments and low socioeconomic backgrounds, made gains in language comprehension abilities following the intervention. Another study, carried out with young francophone children with SLI, also showed an improvement of inferential comprehension following intervention (Desmarais, Nadeau, Trudeau, Filiatrault-Veilleux, & Maxes-Fournier, 2013). Taken together, the results of these studies suggest that inferential comprehension in SLI children aged 4 to 6 is an ability that warrants further investigation and that it is important to consider inferential comprehension when planning intervention with these children.

The studies published to date provide information about some of the difficulties in inferential comprehension experienced by young children with SLI. However, more investigations are necessary to better understand this phenomenon and to provide more solid foundation for planning assessment and intervention for these children. Namely, knowing how young children with SLI perform on different types of inferences, e.g., on causal versus informational inferences, would offer a better picture of their comprehension abilities. In addition, very few studies to date have examined the types of responses provided by children with SLI during an inferential task (Adams et al., 2009; Barnes, Dennis, & Haefele-Kalvaitis, 1996; Gnepp & Gould, 1985; Spackman et al., 2006). Yet, this data could be extremely relevant in the clinic enabling speech language pathologists in every day practice to follow the progression of children with SLI and allowing for better documentation of children's performance.

Table 1. Classification of inference in the context of a narrative

Category	Inference Type	Examples of questions that lead to the inference
Inference hierarchically Related to elements of story grammar - Causal inferences	Trigger	What is the protagonist's problem?
	Internal response	How does the protagonist feel?
	Goal	What does the protagonist want? What is he looking for?
	Problem-solving attempts	What could the protagonist do?
	Prediction	What will happen? Why?
	Consequences/solution	Was the protagonist's goal achieved?
Inference Based on World Knowledge – Informational inferences	Setting (character/place/time)	Who is in the story? Where is this happening? When (day/year/season...) is this story taking place?
	Definition/word meaning	What do you think this word means?

Bowyer-Crane & Snowling; 2005; Makdissi & Boisclair, 2006; van Kleeck, 2008.

This study therefore aims to further the understanding of inferential comprehension in 5-year-old children with SLI in the context of dialogic reading. To do so, we compare children with SLI to age-matched (5 years-old) and language-matched (4 years-old) TD children on a task of inferential comprehension and pursue three objectives. The first objective is to compare the global performance of SLI to both groups of TD children on an inferential comprehension task. The second objective is to verify whether there are differences between children with SLI and TD children on the results obtained when making causal inference and informational inference (based on world knowledge). The third objective is to compare the quality of responses of children with SLI to TD children.

METHOD

Participants

This study, approved by the Research Ethics Committee of the Institut de réadaptation en déficience physique de Québec (IRDPQ), uses a controlled comparison intergroup design (Myers & Well, 2003). Sixty-four children in the Quebec City area of Canada were recruited for the study. Three groups were formed. The experimental group was comprised of 16 children with SLI (mean age: 5;3). The diagnosis of SLI was based on the definition used in the province of Quebec, i.e., severe language impairment characterized by deficits in at least two language components in the absence of an intellectual or sensory impairment. These children had thus met the criteria that determine eligibility for services to children with SLI at the IRDPQ and were currently receiving therapy from that institution. Two comparison groups of typically developing children were also included in the study, i.e., 26 age-matched (mean age: 5;0) and 22 language-matched (mean age: 4;0). The score on the Échelle de Vocabulaire Imagé Peabody (ÉVIP), the French Canadian version of the Peabody Picture Vocabulary Test - PPVT (Dunn, Thériault-Whalen, & Dunn, 1993) was used to form the language-matched group. The ÉVIP is shown to have good reliability ($r = 0.91$ to 0.94). Information about the three groups of children is provided in Table 2. The SLI group was recruited in collaboration with the IRDPQ. Children in the two comparison groups were recruited from previous research projects, through the collaboration of daycare centers and via advertisements on a university e-mail list. A parent checklist confirmed that these children did not present with language or other developmental difficulties.

MATERIAL

The experimental dialogic reading task measuring inferential language abilities was developed using the criteria described by van Kleeck and al. (2006). A book entitled *Pig gets lost* (Amery & Cartwright, 2001) was selected for the task because of its length, the quality of its illustrations, and the amount of predictions children could make throughout the story. Twenty questions were asked orally to the child while reading the story. Ten addressed literal content and ten measured inferential comprehension. Literal questions were included to preserve the naturalness of the activity and to ensure the child some success. All the questions

were integrated into the book to ensure that participants were assessed in both a standardized and a natural manner. Only the data obtained on inferential questions is reported in this study. The inferential questions in the story targeted two different categories of inferences, as defined before, based on the categorization proposed by van Kleeck (2008) and Bowyer-Crane and Snowling (2005) (Table 1). Five questions targeted causal inferences related to story structure. An example of an internal response question in our task was: "How do you think Ms. Dupre feels after finding *her piggy*?" It is appropriate to infer that Ms. Dupre is happy, since she found the lost pig. Five questions targeted informational inferences based on world knowledge. For example, the interpretation of "Why do pigs live in a pen?" was based on world knowledge and required that the child know that a pen is used to protect animals or prevent them from escaping. Each of the ten questions is scored on a scale of 0 to 3 according to the quality of response provided by the child. The total score obtained is out of 30. The rating system used for this instrument was developed based on the four-level system used in the Preschool Language Assessment Instrument - Second Edition [PLAI-2] (Blank, Rose, & Berlin, 2003) and is extensively described in a previous publication (Desmarais et al., 2013). Children's responses were coded as "expected - 3 points", "acceptable - 2 points", "ambiguous - 1 point" or "inadequate - 0 point". The codes and their descriptions are presented in Table 3 (see Appendix A for examples of responses obtained by participants).

Table 2. Characteristics of participants

Participants	SLI (<i>N</i> = 16)	Age-matched (<i>N</i> = 26)	Language-matched (<i>N</i> = 22)
Gender	8 girls 8 boys	14 girls 12 boys	9 girls 13 boys
Mean age ^a (SD ^b)	5.3 (0.4)	5.0 (0.2)	4.0 (0.1)
EVIP (SD ^c)	4.9 (1.4)	6.7 (1.3)	4.6 (1.5)

^a Mean age is presented as follows: year, month.

^b Standard deviation of mean age.

^c Standard deviation of mean age at EVIP.

Table 3. Definitions and score given for each type of response

Response Type	Definition	Score
Expected	The answer given by the child is entirely targeted by the question.	3
Acceptable	The answer given by the child makes sense, but does not match the target response of the question: it is imprecise, not directed toward the focal point of the question, or includes irrelevant information.	2
Ambiguous	The answer given by the child contains relevant information, but is too vague, too specific or is not directly related to what is expected.	1
Inadequate	The child does not answer the question or gives an answer that is not related to the question.	0

The participants' first responses were coded and no feedback was given to the child. However, in some instances when the information was necessary to understand the story, some cues were provided so that the child could complete the task. To limit the impact of expressive difficulties for the children with SLI, the classification of the answers did not take into account the formal aspects of the responses (i.e., phonological processes, syntax or length of sentences). To ensure reliability of the coding system, a blind inter-rater analysis was performed on 15% of the total data ($n = 11$). Correlation of the two judges' ratings was high ($r = 0.951$, $p < 0.001$), suggesting adequate inter-rater reliability.

PROCEDURE

The data used in this study are part of a broader research project designed to assess language comprehension of 5-year-old with SLI and compare it with typically developing children. To collect the data, a 90 minute session was scheduled and conducted by research assistants in the *Centre interdisciplinaire de recherche en réadaptation et intégration sociale (CIRRIS)* of IRDPQ. Research assistants were trained in the administration of the materials and procedures. The interview was filmed to facilitate the transcription and the analysis of the children's responses as well as the inter-rater reliability. This study reports on the results of the experimental task designed to measure inferential language abilities of the participants.

DATA ANALYSIS

An analysis of variance (ANOVA) was conducted to compare the mean scores obtained by the three groups in order to compare (1) total score of inferential abilities, (2) types of inferences and (3) the quality of responses to inferential questions. Based on the significant differences that emerged, post hoc analysis using a Tukey test were performed. An alpha level of 0.05 was used to determine significance of the differences observed.

RESULTS

The scores obtained by the three groups of children in the inferential comprehension task are reported in Table 4. A scatter plot presenting the performance of participants and the means obtained by each group is shown in Figure 1. For the first objective, the mean total score on the task was compared across groups. A significant difference between groups was demonstrated for inferential comprehension scores ($F(2, 61) = 3.392$, $p = 0.040$). Post hoc analysis using the Tukey test showed that the performance of children with SLI was significantly lower than age-matched children (Tukey's honestly significant difference (HSD) 4.46, $p = 0.05$). However, no significant differences were observed between the performance of children with SLI and language-matched children (Tukey's HSD = 1.02, $p = 0.861$). Finally, no significant differences were observed between the language-matched and age-matched children for inferential comprehension scores (Tukey's HSD = 3.44, $p = 0.123$).

To address the second objective, we compared the groups' scores on the two categories of inferences, i.e., causal and informational inferences. These results are also reported in Table 4 and illustrated in Figure 1. A significant difference between groups was observed only for informational inference category (Informational: $F(2, 61) = 4.544$, $p = 0.014$, Causal: $F(2, 61) = 1.265$, $p = 0.289$). Post hoc analysis using the Tukey test showed that the children with SLI and language-matched children scored significantly lower than age-matched children for this category of inference (SLI: Tukey's HSD = 2.70, $p = 0.026$ and Language-matched: Tukey's HSD = 2.21, $p = 0.05$).

Table 4. Means and standard deviations obtained by each group on the two categories of inferences

	SLI (S) (<i>N</i> = 16)	Age-matched (A) (<i>N</i> = 26)	Language- matched (L) (<i>N</i> = 22)	<i>p</i> value
Inferential comprehension				
Raw score / 30 (SD)	14.34 (5.54)	18.80 (6.89)	15.36 (4.93)	S*< A = L
% score (SD)	46.92 (18.53)	62.66 (22.98)	51.28 (16.29)	
Informational inferences				
Raw score / 15 (SD)	4.88 (2.53)	7.58 (3.76)	5.36 (2.85)	S*= L* < A
% score (SD)	32.50 (16.84)	50.51 (25.10)	39.05 (18.93)	
Causal inferences				
Raw score / 15 (SD)	9.47 (3.61)	11.22 (3.74)	10.00 (3.75)	S = A = L
% score (SD)	63.13 (24.08)	74.82 (24.93)	66.67 (25.02)	

* $p \leq 0.05$; ** $p \leq 0.01$.

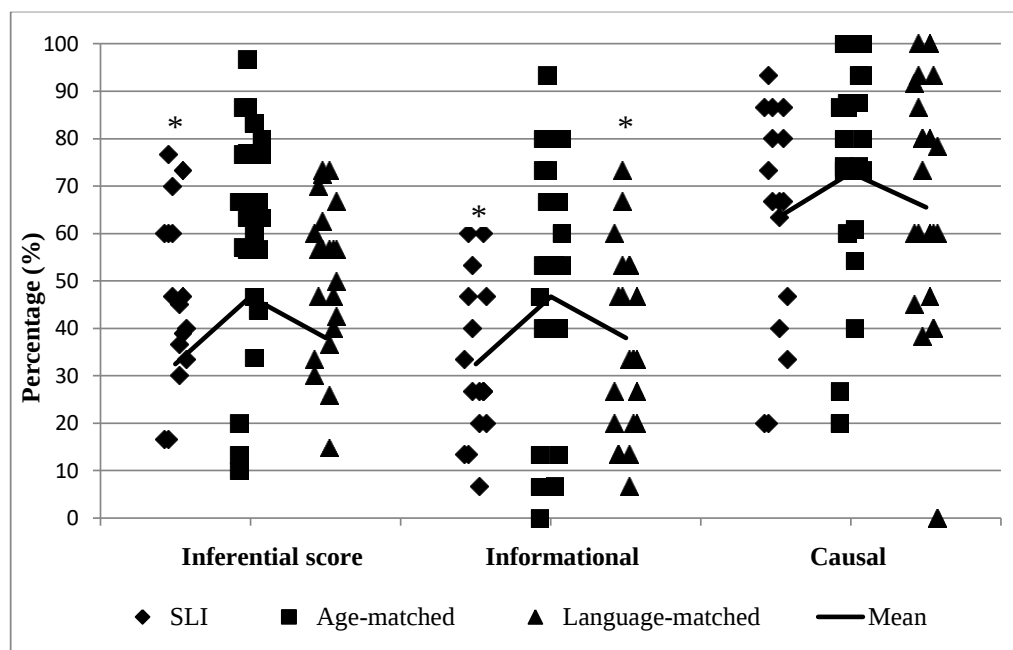
=: no statistical difference between groups < or >: statistical difference between groups.

Table 5. Mean number of responses in each category of inferential questions for the three groups of children, variances and standard deviations

Response Types	SLI (S) (<i>N</i> = 16)	Age-matched (A) (<i>N</i> = 26)	Language- matched (L) (<i>N</i> = 22)	<i>p</i> value
Expected	3.38 (1.58)	5.00 (2.33)	3.77 (1.34)	S* < A = L
Acceptable	1.31 (1.01)	1.11 (0.95)	0.86 (0.83)	S = A = L
Ambiguous	1.50 (0.82)	1.04 (1.00)	1.82 (0.91)	L* > A = S
Inadequate	3.75 (2.24)	2.62 (2.56)	3.31 (1.96)	S = A = L

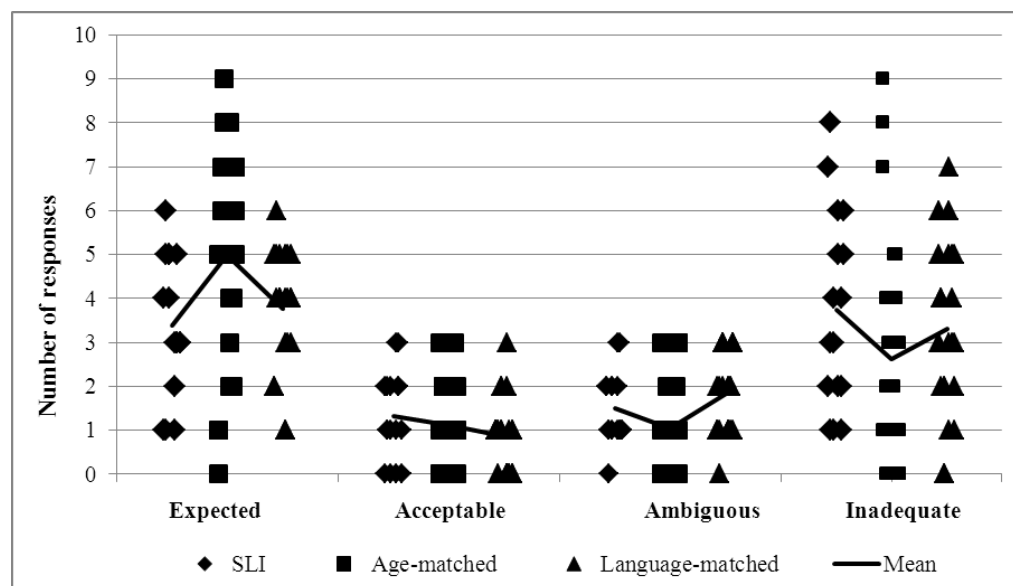
* $p \leq 0.05$; ** $p \leq 0.01$.

=: no statistical difference between groups < or >: statistical difference between groups.



*Group significantly lower.

Figure 1. Scatter plot presenting participants' scores and the means obtained by each group.



*Group significantly lower + Group significantly higher.

Figure 2. Mean number of responses for each category of inferential questions for the three groups of children.

For objective 3, to analyze the quality of responses provided by the participants, a score representing each category's number of responses (expected, acceptable, ambiguous and inadequate) was calculated. It should be noted that this analysis of the quality of the children's responses relies on the same data as the analysis for objective 1. Mean score for each category was calculated independently for the three groups of children. The mean number of responses obtained by category are reported in Table 6 and Figure 2 shows a scatter plot of the performance of the participants. The ANOVA revealed a significant difference between groups for the "expected" responses ($F(2, 61) = 4.539, p = 0.015$) and for the "ambiguous" responses ($F(2, 61) = 4.306, p = 0.018$). Post hoc analysis using the Tukey test showed that the children with SLI gave significantly less "expected" responses than the age-matched group (Tukey's HSD = 1.63, $p = 0.021$). However, no difference was found between groups for the "acceptable" responses ($F(2, 61) = 1.116, p = 0.334$) and the "inadequate" responses ($F(2, 61) = 1.316, p = 0.276$). Finally, with regards to "ambiguous" responses, language-matched children provided significantly more "ambiguous" responses than age-matched children (Tukey's HSD = 0.78, $p = 0.014$).

DISCUSSION

The aim of this study was to compare the performance of 5-year-old children with SLI to age-matched and language-matched children in a dialogic reading task measuring inferential language abilities. Our results underscore some differences between the groups with regards to the category of inferences that are mastered by TD children and those mastered by children with SLI. They also inform us about the quality of responses provided by young children in an inferential comprehension task. With regards to inferential ability, a striking observation is that the 5 year old children with SLI had significantly more difficulty making inferences than TD peers of the same age. Our results are consistent with previous research based on school-age children with SLI (Adams et al., 2009; Bishop, 1997; Botting & Adams, 2005; Bowyer-Crane & Snowling, 2005; Dodwell & Bavin, 2008; Ryder et al., 2008). In addition, the results show that children with SLI, as young as 5 years old, prior to school entry, present with difficulties in inferential comprehension. In addition, as predicted by Adams and al. (2009), Bishop (1997) and Botting and Adams (2005), our data reveal that the inferential abilities of the children with SLI are comparable to those of the younger TD children. These results add to accumulating evidence that the performance of children with SLI is quite different from that of TD children. As previously mentioned, TD children as young as 4 years old exhibit good inferential abilities in dialogic reading tasks. According to studies on the development of the inferential ability during the early childhood period (Adams et al., 2009; Blanc, 2010; Ford & Milosky, 2008; Gnepp & Gould, 1985; Makdissi & Boisclair, 2006; Wenner, 2004), the ability to make inferences emerges around the age of 3 or 4, is further refined between the ages of 4 and 6 and continues to improve with maturation. Thus, it is clear that the ability to make inferences is emerging during the preschool period (Kendeou et al., 2008; van Kleeck et al., 2006) and that supporting the development of this ability at that age is reasonable.

Our study included an in depth examination of causal inferences. For this category of inference, the three groups of children investigated in this study performed well. This

confirms, as suggested in previous works (Deconti & Dickerson, 1994; Ford & Milosky, 2008; Makdissi & Boisclair, 2006; Wenner, 2004), that preschool children, as young as 4, are clearly able to make this category of inference. This could be explained by the fact that causal inferences related to story structure are likely often used by parents and educators while reading a story. It has been suggested that caregivers spontaneously establish a conversation with children around the problem that characters face in a story whereas they do not often discuss word definitions, an informational inference based on world knowledge (van Kleeck, 2008). Finally, the presence of a visual support during the task could have facilitated children's ability to answer causal inference questions related to story structure. For example, when answering a question such as the emotion experienced by a character, children can rely on the facial expression of the character to make an inference.

Turning to informational inferences based on world knowledge, our results show that the children with SLI and the younger TD group had more difficulty understanding world knowledge inferences. This finding is consistent with what Bowyer-Crane and Snowling (2005) obtained with school-age children. This type of inference requires interpreting a message using acquired world knowledge. Indeed, as Bowyer-Crane and Snowling (2005) and Cain and Oakhill (1999) note, children with poorer comprehension have more difficulty accessing their world knowledge when they perform a task. It has been suggested that problems of access to world knowledge could actually impede the construction of a coherent mental representation of a story and hinder the comprehension of inferences (Adams et al., 2009; Bishop, 1997). Moreover, some authors have investigated the general knowledge deficits as a source of inference-making difficulties (Barnes et al., 1996). This being said, when world knowledge is controlled, children with poor comprehension abilities present more difficulties in making inferences (Cain et al., 2001; Cain & Oakhill, 2007). It appears that it is not the lack of knowledge but the ability to retrieve knowledge and information that presents a challenge for these children.

Furthermore, we explored this subject further by going beyond the children's scores on the task in order to shed light on the quality of their responses to inferential questions. To address the third objective, we found that children with SLI gave significantly less expected responses than the children in the two TD groups. Again, these results suggest that understanding inferential questions is more difficult for these children which results in a fewer number of target responses. However, as it is impossible to completely isolate receptive and expressive difficulties in this task, it is likely that expressive limitations could have influenced the children's ability to produce complete and accurate answers. Another interesting finding is that the younger TD group provided more "ambiguous" responses than the two other groups. The responses of the younger children differ from those of the other two groups in that they are less complete and not always directly related to the expected response. In general, the TD 4-year-olds in this study attempted to answer and elaborate, even if their responses were not related to what was expected. This strategy differed from that of children with SLI children who tended not to answer. It is possible that children with SLI would rather not talk if they are unsure about their answer. This could be explained by the observation that children with SLI are aware of their language difficulties, an awareness that is linked to a reduction in verbal production (Jerome, Fujiki, Brinton, & James, 2002; Lindsay & Dockrell, 2000).

Some strengths and limitations of the current study must be underscored. As previously mentioned, little research has examined inferential abilities of preschool children with SLI.

One of the strengths of the present study is that it extends knowledge about inferential comprehension in SLI. Our results point to some areas of relative difficulty for children with SLI including making inferences based on world knowledge and providing answers that are close to the target response. These new data, collected on an aspect of language that has not been extensively studied in young children with SLI, provide information that can later be integrated in the assessment and intervention of these children. We acknowledge some limitations of the current study. First, the execution of this experimental task was conducted at the end of a testing session. Therefore, it is possible that fatigue influenced the behaviour and performance of some children (attentional capacity, reduced collaboration, loss of interest, etc.). In future research, it would be better to administer the task earlier during the assessment in order to avoid this possible effect. Second, as mentioned earlier, separate expressive and receptive abilities in children during a highly ecological task is a challenge. Thus, it is likely that the difficulties with expressive language in children with SLI might have an impact on the measure of the inferential abilities.

CONCLUSION

This study contributes to a better description of inferential language abilities in young children with SLI. The results are helpful in refining the expectations of researchers and clinicians regarding the performance of young children with SLI on inferential comprehension tasks. The study also offers some elements of foundation for planning better intervention for these children, especially with regards to documenting the quality of responses provided by children when answering questions relating to inferential comprehension. Finally, this study highlights the value of dialogic reading as a highly natural and familiar task that can also be carried out in a standardized manner.

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APPENDIX A

Sample of responses obtained to the world knowledge inference question “Why do pigs live in a pen?”.

Types of responses	Examples
Expected	"To prevent them from escaping." / "So they do not get lost."
Acceptable	"So they can eat." / "So it does not dirty the house."
Ambiguous	"Because it's a farm." / "Because they love the mud."
Inadequate	"I do not know." / "Because."

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Chapter 8

VIRTUAL AVATAR SIGNING IN REAL TIME AS CLASSROOM SUPPORT FOR DEAF STUDENTS

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ABSTRACT

This chapter describes a speech and text translator from Spanish into Spanish Sign Language, trying to solve some of the problems that deaf people find when they try to access and attend to specific training courses. The application uses the voice as input for translation, but it also translates text from PowerPoint slides used by the teacher to explain the lesson concepts. In addition to the translator system, a virtual avatar has been created and integrated in the final application to visually represent the signs translation. A set of real-time avatar animations representing the signs are used, with individual words and common used phrases in the training environment. The process to create, adapt and reproduce the movements and mix them in real time is described. The tool is based on a client/server architecture where teacher and deaf students have their own application to help both in teaching and learning during a class session, also facilitating the communication between them using a chat. The system can be used in courses where deaf and hearing people are sharing the same material and classroom, so deaf people can attend and follow the class without problems, improving the integration of this group of people to specific academic areas. The tool has been tested to obtain direct information with a group of deaf people from the Deaf Association of Seville.

Keywords: Virtual Sign Animation, Speech to Gesture Translation, Virtual Characters, Avatar Animation

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INTRODUCTION

The constant evolution of computers and portable devices make it possible to develop applications to help impaired people in some aspects of their life. This is the case of deaf people. In the field of computer graphics, some efforts have been made to develop systems that help hearing impaired people in their communication difficulties.

The tools that have been developed help deaf people to communicate with ordinary people through the computer. Some of them are intended to develop gesture to speech systems to translate a sign language to a spoken language, while others go in the opposite direction, translate text or speech to a sign language by means of virtual avatar animations representing the signs.

These systems have two main problems to solve: (1) to translate a speech or written text from a language to a sign language; (2) to create movements for the virtual avatars that can be, at least, understandable by deaf people (Kipp, 2011), and, even better, with a certain level of fluency. These problems are addressed in the present research.

An additional problem is the existence of many different sign language standards, as there is no standard not even in any given country, so the efforts made on a system to translate from one specific language are not always suitable for other languages.

In this chapter a speech and text translator from Spanish into Spanish Sign Language, *Lenguaje de Signos Español* (LSE) is addressed. Moreover, the process of creating a virtual avatar signing in real-time is described. The result of the research is applied to solve some of the problems that deaf people find when they try to access and attend specific training courses, sharing the class with hearing people.

Thus, when a company offers different training courses (for example, for unemployed people) and they have to adjust the cost of each course, it is difficult for deaf people to enroll in these courses because of the costs associated to hiring a translator. This can be harder if there are several hearing people and a small group of deaf people interested in the course. If a special sign language application for deaf students is offered, where they can follow the lessons in sign language sharing the class with other people, this can become a good starting point to improve their integration. If this application also tries to help in the communication between deaf person and teacher, increases the opportunities offered by the tool.

This is the main objective of the present research. An automatic system for translating Spanish to LSE has been developed which supports the simultaneous translation of voice and PowerPoint presentations to LSE. There is also an avatar signing in real time (RT), and a special chat between deaf students and his/her teacher who can or not have knowledge of LSE.

In a literature review, which will be detailed in the next section, authors have not found applications with the same purpose using virtual avatars signing in real time.

The chapter is organised as follows: Section 2 shows a review of the literature. Section 3 presents the system architecture. Section 4 and 5 describe the different modules and the interface in detail. Section 6 explains the main problems and our solutions. Sections 7 and 8 show the evaluation results, the main conclusions and future work.

RELATED WORK

After a revision of the current literature, we have classified the different efforts made to keep communication between deaf people and hearing people. Some researchers have focused their work on gesture recognition, trying to automatically recognize a sign from a specific sign language. Liang (Liang, 1998) developed a Taiwanese Sign Language interpreter. This system uses a DataGlove for capturing gestures, and solves the problem of end point detection in a stream of gesture. Using hidden Markov models, the system recognizes in real time an average rate of 80% out of 250 words in their lexicon. Much in the same way, other authors have developed systems for sign language gesture recognition of other languages, using different approaches. For instance, the method developed by Sagawa (Sagawa 1998, Sagawa 2000) to automatically interpret Japanese Sign Language where a sign gesture is recognized using segmentation of words, or an American Sign Language recognizer system using video to track the user's hands (Staner, 1966). Other researchers have focused their work on developing systems that automatically translate into a sign language (Maasaki, 1996), most of which use virtual avatars to represent a speech or a written text in a sign language.

One of the main projects in this research line is VISICAST (Bangham, 2000), which translates English text into British Sign Language. The main effort of this project has been to process natural language by means of a parser that identifies functional words and resolves ambiguities by using an SGML notation (Elliot, 2000; Safar, 2001). Once a text is translated, signs are displayed using computer animation of a Virtual Avatar in two steps. First, by means of a high fidelity motion capture system a human signer is recorded. Second, a post-processing tool is used, which decomposes the captured sequence into individual signs. This system can be applied to subtitle television programs or create web pages (Verlinden, 2001).

Other projects of the same research group use virtual signing technology. In eSign, avatars are used to create signed versions of websites (Verlinden, 2005), and in the SignTel avatars are added to a computer based assessment test that can sign questions for deaf candidates. In eSign project (Zwitterslood, 2004), instead of using motion capture to generate the avatar animation, a temporal succession of images is used, each of which represents a static posture of the avatar. The signs are described through a notation for Language Signs (HamNoSys), which define aspects of hand position, speed and gesture amplitude.

Research with Japanese Sign Language (JSL) has been also made, such as Kuroda (Kuroda, 1998) who developed a telecommunication system for sign language by utilizing virtual reality (VR) technology, which enables natural sign conversation on an analogue telephone line.

Kato (Kato, 2011) uses a Japanese for a JSL dictionary with 4,900 JSL entries that have an example-based system to translate text. After that, the system automatically generates transitional movements between words and renders animations. This project is intended to offer TV services for deaf people, especially in case of a disaster, when a human sign language interpreter is not available. In this research a number of deaf people have been asked to watch the animations pointing out its lack of fluency as sign language (Akihabara, 2012).

Regarding Spanish Sign Language, San-Segundo (San-Segundo, 2012) describes a system to help deaf people when renewing their Driver's License. Such system combines three approaches for the language translator: an example-based strategy, a rule-based

translation method and a statistical translator that uses VGuido virtual animations. Thus, to create a sign animation, an XML application which supports the definition of sign sequences is used, which mixes static gestures with movement directions. After that, a movement generation process computes the avatar's movements from the scripted instructions.

After the literature revision, it seems that researchers have not found applications for the same purpose that use virtual avatars signing in real time.

SYSTEM ARCHITECTURE

As we mentioned above, this application tries to improve and facilitate the communication between a deaf student and a teacher in an academic area, not only providing a translation of voice and PowerPoint presentations in LSE, but also offering a special chat where they can communicate in both directions in an understandable way. This will improve the deaf people's access to specific training courses. For this reason, the architecture implemented is based on a client-server structure, with the main application in the teacher side and the client application in the student side (Figure 1).

The main application (teacher side) is a system based on a hierarchical architecture, where each module is responsible for a specific part in the translation, communication and visualization process.

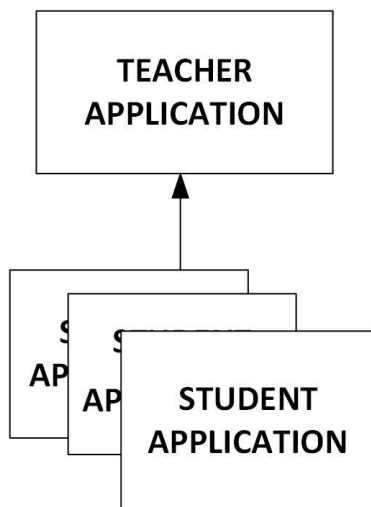


Figure 1. Client/Server architecture.

In the student side (client), the application centres its functionality on the communication process, including the translation shown to the student both in text and LSE format through a signing avatar, and the chat for communication purposes. The main module of each application is shown in the following diagram (Figure 2).

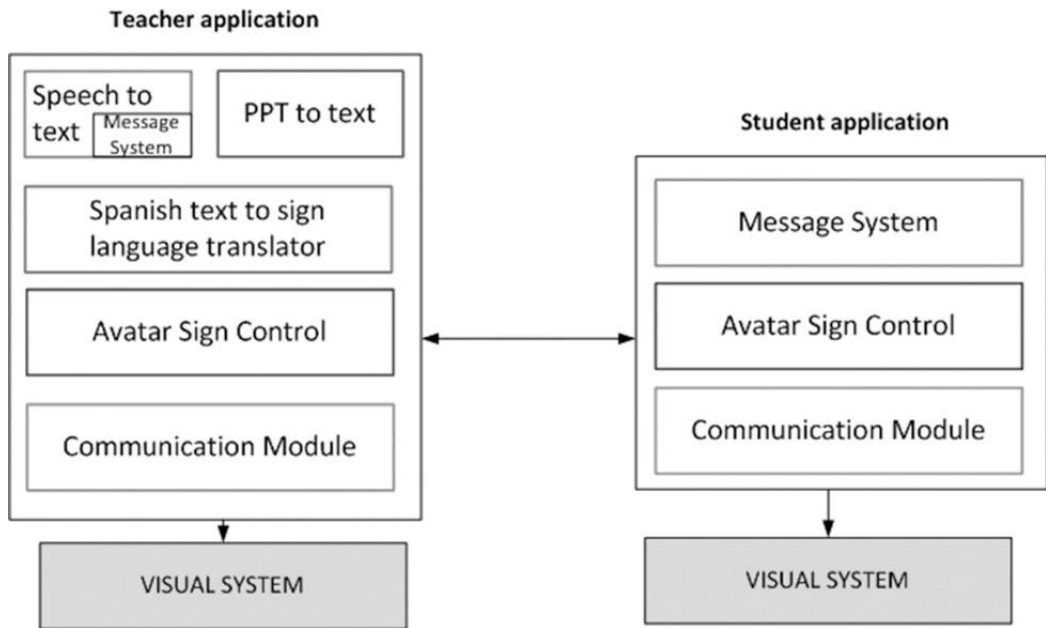


Figure 2. Modules included in each application.

Focusing our attention in the teacher application (because the modules used in the student side are similar to those used in the teacher side), the architecture is divided in five different modules (Figure 2):

- *Speech to text module*: connected to the voice input, receives the voice and extracts the words, producing a collection of words separated in sentences.
- *PPT to text module*: receives a collection of slides from a PowerPoint presentation, producing a collection of sentences associated with each slide and a collection of words in each sentence.
- *Spanish text to sign language translator*: this is the most important module. It receives a sentence from the previous modules and using a “rule-based method” and an “analogy method”, produces a translated sentence to the LSE.
- *Avatar System module*: controls and animates the avatar using a database of movements (vocabulary). From the LSE sentence generates the correct animation movement and shows it to the user in real time.
- *Communication module*: receives all the information to be communicated to the other applications and sends the correct messages using sockets. This module is also used by applications for control and synchronization purposes.

In the following section each module is described.

SYSTEM COMPONENTS AND FUNCTIONALITY

From the global architecture, introduced in the previous section, five main modules are described in the following subsections (Figure 2).

Speech to Text Module

The Speech to text module is the responsible for collecting the audio (voice input) from the microphone connected to the computer, analyse the information and transform it into the corresponding text. Contains two main elements, a Speech recognizer to analyse the voice input and a Message system to manipulate the text data.

The Speech recognizer is responsible for generating a collection of words or sentences from a voice input that serve as input to the following modules. This module uses Microsoft Speech SDK 5.1, included in every Windows 7 installation by default. This software has the advantage that it does not need to be installed and configured by users and, it can be also easily trained, being able to learn and improve the recognition patterns as the software is being used. Before selecting this option, we have analysed different possibilities of current recognizer systems, and we have selected this option because of its easy installation, simplicity of usage, the API to communicate with our application and the training possibilities for improving the recognition. The only limitation associated with this software is that it only can be used under computers with Microsoft Windows Operating System.

Associated with the usage of this recognizer software in our application, the main problem found in the recognition process is how to detect when a sentence starts and finishes. The recognizer can provide all the words it collects from the microphone, but it is important to have the complete sentence so as to determine the best method to be applied for translation. In Section 6 we analyse the problem and explain the solution.

The Message system is responsible for showing the sentences involved in the translation process in the interface. In the application a “debug mode” is included so that it is possible to control the results of the different steps of the translator. This is useful because users can detect if there has been any mistake or problem in the recognition step or later, stay informed about all the intermediate steps of the translation process and act accordingly to solve any problem.

PPT to Text Module

A PowerPoint presentation (PPT) is a very important complementary piece of information for the speech in class. In our case it can help and solve the possible mistakes that the recognizer can make when recognizing oral explanations. Some deaf people cannot read and, therefore, it is necessary to provide a translation of the PPT that gives deaf students all the information taught in class. For that reason, a PPT translator to sign language is included in the system.

The PPT to text module reads the PPT opened by the teacher for one specific session; then, a collection of sentences in each slide is extracted and analysed for obtaining the

collection of words contained in each sentence. The translation module (Section 4.3) applies different rules and obtain one or more possible translations for that sentence, selecting one as a default (depending on a measure of the probability of success).

We include in our application a Slide Editor with a wizard so as to facilitate the revision and correction of the PPT conversion into LSE (Figure 3), where it is possible to see the different possible translations offered by the system.

The teacher can review the translation associated with each slide and can change between the offered options or specify (write) a better new one. This can be made by the same teacher or with help of a person that has LSE knowledge.

Also, by using this wizard it is possible to determine which words need to be spelled in each sentence and how they will be spelled in the translation. The revision changes can be saved to be later used for the PPT translation in the application, allowing the teacher to previously prepare the classes and review all the material out of the class session.



Figure 3. Slide Editor wizard interface.

Because using all the class material (PPT, LSE translation application, etc.) can be complicated for the teacher during the session, a remote control is also provided, which is helpful not only to manage the application, but also the global PowerPoint presentation shown to all students on the main screen. With this, the teacher can change in the program between slides, phrases in the slide and between PPT and speech as a resource of the translation process. Actions associated with the slides will affect to the global PowerPoint presentation shown to the students, using a connector between them implemented in our application. So the teacher only needs to manage all the class material through the application, using this remote control, also been able to select what has to be translated in each moment.

Text to Sign Language Translator

The following step in the translation process starts with a sentence in Spanish and has to end in a collection of signs to be reproduced by a virtual character in real time. In this step is where the text to sign language translator module must be activated.

This module receives the final Spanish sentence and analyses it so as to generate a correct translation into LSE.

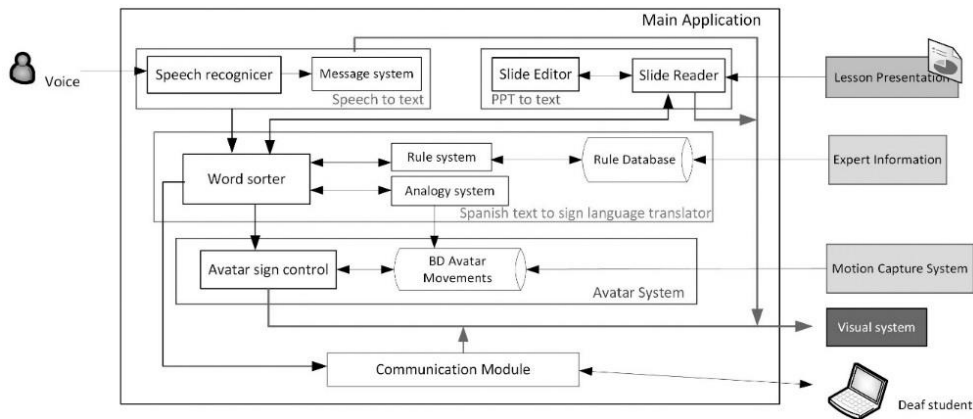


Figure 4. Components included in each module in the Main Application.

This will be later signed by a virtual character in real time. For that translation, two complementary methods are used: a “rule-based method” and an “analogy method”, (Figure 4).

As we will explain later, the system has a vocabulary including specific and general words and several common sentences (obtained by a motion capture system), all of which have been classified into different categories to facilitate the translation.

First of all, each word, from the collection of words provided by the previous modules, is classified into one of the pre-established categories. For example: a sentence like “*IN THE COURSE WE WILL WORK WITH COMPUTER*” will be categorized as “*in<none> the<none> course<object> we<personal pronoun> will<future> work<verb> with<none> computer<objct>*” and translated as “*FUTURE WE COURSE COMPUTER WORK*”.

Next, we apply the “analogy method”, consisting of searching for coincidences with pre-recorded sentences in the vocabulary. If a corresponding sentence is found, it is directly used as the final translation. The sentence will be given to the avatar module which will reproduce the correct associated translation.

In case this method fails, a hierarchical system of rules is applied. As we mentioned before, there is no standard associated to LSE, and, therefore there is no grammatical rules defined that can be applied and codified for translation purposes. In our case, different experts in LSE have extracted a collection of rules that are useful to obtain correct LSE sentences. Using these codified rules, the system tries to find the most adequate one for the sentence being translated, starting from the most particular and moving towards more general ones.

When a coherent rule is found, according to the sentence structure and categories, the module applies it and generates the corresponding translated phrase. After the process, if there is no specific rule to be applied, we have a general case rule at least to try to give the

information to the student. This rule-based methodology allows providing translations of any sentence, giving greater flexibility, only with the limits of the vocabulary available.

When the final sentence is obtained, it must be decomposed into words to be signed. These words pass to the Avatar system module, which will represent them visually.

Avatar System Module

The main functionality of the avatar system module is to represent, control and animate realistically the virtual character integrated in the application so as to reproduce the signs required for the translation of the original sentence.

For this purpose, a vocabulary of around 2,000 words has been captured, for general and specific conversations in the academic area of interest. This vocabulary has a collection of individual signs in the area objective of the final test, and a pool of common vocabulary that can be used for general conversations (like salutations, use of numbers, colours, days, etc.).

Also, the application can spell words using the alphabet for the translations of names, concepts or other required words. To improve and speed the translation, a collection of 150 common sentences in all-purpose and classroom conversations has been included in the vocabulary. This kind of vocabulary is more convenient than those only based on complete sentences. We have more flexibility when translating phrases by using words in the vocabulary. However, it is true that it is more susceptible to translating mistakes or errors due to the non-standard rules used.

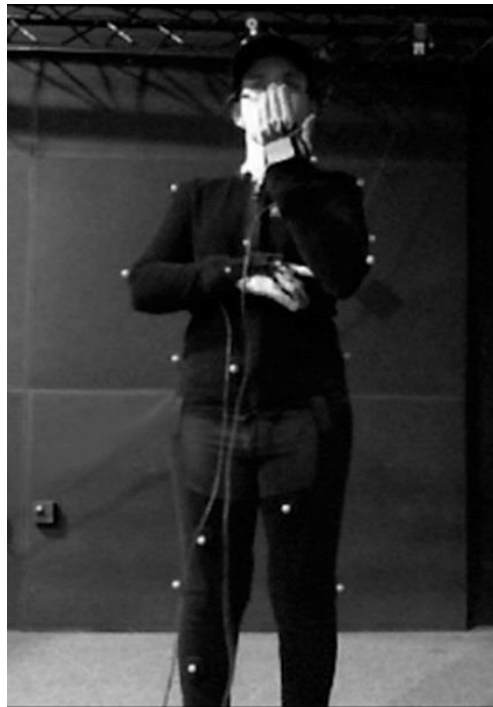


Figure 5. Motion Capture Suit and data gloves.

All vocabulary is recorded by an LSE expert using a motion capture system. An 11-infrared cameras setting (NaturalPoint system) and a suit including 34 reflective balls for recording the body motion is used. Also, two data gloves (CyberGlove with 18 sensors) record the movement of all fingers (Figure 5). Each movement captured is adapted to the avatar using MotionBuilder and 3d Studio Max, producing a final version of each sign that has no wrong or missed data. A system based in cal3D and OpenSceneGraph, to integrate, control and animate avatars in real time has been developed. Using this system an avatar can be integrated in the interface, and controlled in RT to simulate the sign language speaking (Figure 6).

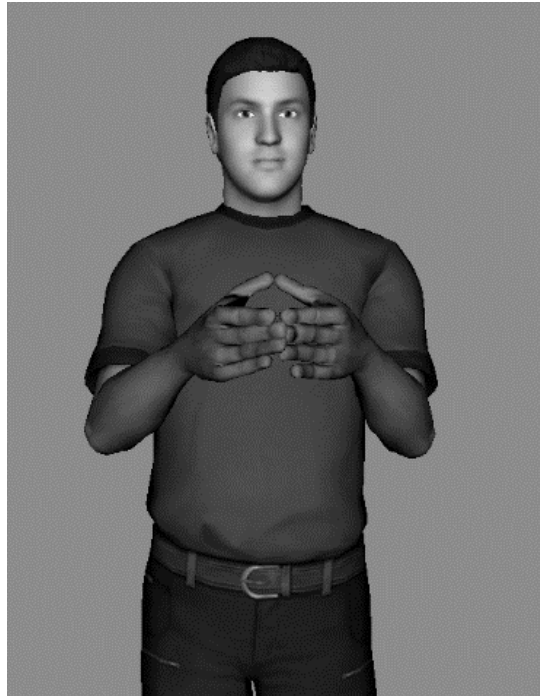


Figure 6. Avatar simulating the sign “Navigate”.

Once the final sentence is translated into LSE, the Avatar system receives it as a collection of individual words. This must be reproduced fluently in a smooth and connected way to represent a sentence or as a complete sentence (without any intermediate processing).

In the first case, this module has to obtain the individual signs from the motion database and interpolate them so as to connect and reproduce all the words in the sentence sequentially. Reproducing each sign individually will give the impression of a robotic and non-realistic animation, and may hinder the comprehension by deaf people.

For this reason, the words comprising the sentence are analysed and the best interpolation points between them are determined, based on the main motion curve of the arms (which motion starts and finishes in a pre-established reference position). Next, all the words in the sentence can be reproduced realistically and fluently, applying an interpolation between frames of one sign and the following one.

In the second case, the system receives a complete sentence to be reproduce, obtains it from the database of movements and activates it to be performed by the avatar (without any intermediate processing).

To complete the avatar motion, different automatic facial animations have been created so as to provide a more realistic human aspect.

Communication Module

As we mentioned before, the system presented is based on a client/server architecture, where the main application (server) is in the teacher side, and the client application (one or more) is in the deaf student side. The connection between all the client applications and the server is done using sockets and a collection of messages to send information, control and synchronization data.

The communication module is used in both sides and is involved in the transmission of information between the different systems components. The module is important for several reasons: on the one hand, this module is responsible for sending all the control information between applications.

On the other hand, this module includes the chat that facilitates communication between a teacher and his/her deaf students. The deaf student can send messages in text mode and receives the information in text and LSE format. The teacher sends and receives the information in text mode; this is helpful for people with little or no LSE knowledge.



Figure 7. Teacher interface, with the control of PowerPoint and speech translations.

APPLICATION INTERFACE

The application interface is similar in both sides; it includes specific elements for the teacher to start and manage the PowerPoint presentation directly.

The interface has two modes: PowerPoint (left side) or speak mode (right side). These modes are activated by the teacher (with the remote control) depending on what she/he wants to show to students (Figure 7). As we can see in the figure 7, the interface has a configuration menu at the top, the PowerPoint information in the left side, the avatar visualization and the speak information in the right side and the chat and writing possibilities at the bottom.

The main menu application allows the user to load PPTs and configure different elements of the interface, such as:

- the avatar costume: to adapt it to the final user, making the avatar signing visualization more understandable (Figure 8),
- the background colour: to adequate the background to improve the visualization of the avatar,
- the signing speed: where the user can select between different predefined speeds (0.25x, 0.50x, 1x, 2x, 3x, 4x) to improve their understanding of the lesson,
- the text font: to configure the text in the interface,
- the main signing hand: to adequate the main avatar's hand signing,
- the interface mode: there are two possible modes that the teacher can activate with the remote control: PowerPoint (left side) or speak mode (right side).

In the PowerPoint mode the user is provided with information about the current phrase to be translated, the slide of the presentation, and the translation of the phrase into LSE (Figure 9).



Figure 8. Different customs available for the avatar.



Figure 9. Teacher interface for the PowerPoint translation control.



Figure 10. Teacher interface for the Speech translation control.



Figure 11. Detail of the lower part of the application interface.

In the speaking mode, the user is given information about the original phrase recognized by the Recognizer (over the avatar) and the translation to the LSE (under the avatar), while the avatar is signing (Figure 10).

The lower part of the application has communication facilities (including the chat) and information about the state of the system (Figure 11).

PROBLEMS AND SOLUTIONS

During the development of the application important problems have been found that need to be solved so that the application is successful. Let's review the main problems found and the solution adopted in each case.

First of all, in the Speech Recognizer, where the input information is the teacher voice, it is difficult to determine when a phrase starts and ends. For that reason, after a period of analysis of how people speak and later tests using the recognizer software, we determine that establishing a 1 second of silence between sentences provide a very good results in the recognizer. This method combined with the detection of common connectors in Spanish languages like “y” (and), “o” (or), “pero” (but), etc..., results in a very good obtaining method, being able to separate correctly different phrases in the 90% of the cases.

Moreover, as the LSE language sign is a non-standardized language, to make possible the automatic virtual translation, experts in LSE have extracted a collection of rules to be implemented in the system and apply them to translate the sentences as best as possible. Related with the previous problem, it has been found that the LSE establishes a relation between the words in a sentence that goes from the most general to the most particular. For example, to say “*THE BALL IS IN THE HOUSE*”, they will sign “*HOUSE BALL BE*”, ordering the phrase depending on the size and the particularity of each element. This implies that it is necessary to establish a semantic relation between the different parts of the sentence.

Because we have a very general system, that can be applied to several environments only adding signs to the vocabulary, it is difficult to relation all the words between them to determine which fits in the other. In addition, some of this kind of sentences depends on the context or the meaning of the global sentence, which it is difficult to codify.

For that reason, a property of dimension has been assigned to each word, so the words are ordered in the sentence according to this property.

In the case of the chat system, the main problem found has been that some deaf people cannot write. For that reason, we are now working to improve the chat with pictograms of signs pictures (that can be reproduced to check the sign in case of doubt) organized in different categories. With the pictograms a deaf person can create a sentence to communicate with the teacher, based on the vocabulary we already have. We will develop this extension of the chat and analyse, not only the usability and understanding of the deaf people, but also the comprehension of the teacher, that will receive sentences written with LSE syntax. In the case of the teacher, an extra effort will be needed to understand the global meaning of the sentence, to give a correct answer.

After the evaluation of the application it has been found that not all the deaf people have the same literacy and need the same speed when signing. The same happens with the visual information provided.

For that reason, several customized elements in the interface have been created (see Section 5) to facilitate the deaf people understanding and the teacher usage.

EVALUATION

To evaluate the system and analyse possible problems a complete test with one teacher and a group of deaf people has been performed. The main objective of the session was to obtain a direct feedback from the deaf people about the possibilities and suitability of this tool for helping them in specific courses. The test consisted of a presentation lesson taught by a teacher (with little knowledge of LSE) to a group of deaf people from the Deaf Association of Seville. In a classroom, we try to reproduce the situation where the application will be used later: one teacher with the teacher side application (server) in a laptop, a microphone and the remote control, and a deaf audience, some of them interacting with a laptop with the student application installed. The teacher explained a lesson using a PPT, exchanging between voice and PowerPoint. The audience were able to communicate with her using the chat in the application by means of a laptop available for them. After this test, the deaf people comment their impressions about the application and answered a questionnaire with detailed information about their opinion.

From this test, some ideas were extracted after the revision of the audience opinions and questionnaire results. The results were better than the first impression and the application was improved using the audience suggestions. The main conclusions obtained were:

General Comments

- It is important to be able to select the avatar main hand to sign, because the different signing method of the deaf people, similar to the right-handed or left-handed people. The application was completed to include this possibility (see Section 5).
- The sign language does not have a standard, so different signs are used depending on the area or the city where the application will be used. So, one specific vocabulary can have wrong signs depending on the place where it will be used. This is difficult to resolve in a general way, only the improvement of the vocabulary offered will be possible, also including a classification of the words in Spanish region or area, and selecting it depending on where will the course be teach.
- It is important to take into account the neologism (new words/signs). This involves updating the vocabulary when necessary.
- The deaf people have different literacy levels, so they need to configure the speed of the avatar to their specific skill levels. This was solved, adding to the application the avatar speed configuration (see Section 6).

The problems found in the application by users were:

- Some signs are not clear enough. This problem was corrected after the test improving the signs that were not clear.

- The application had little vocabulary. This problem was later improved with more words and sentences.
- They found few rough movements that need to be smoothening. These movements were improved.
- The avatar has little facial expression and this is important information when the LSE is used. This problem will be improved in the new version of the application.
- They reported some possible problems with the chat, because some of the deaf people cannot write. To solve that, a visual interface will be added to the chat.

At last, the tool presents some advantages and improvements from existing ones:

- From their point of view, it is a very useful system for on-line courses or as a visual book.
- In a short time, they think that this application will be useful to study at home or review material in Spanish, because digital written materials are difficult for them (some of them cannot read). Also, it will be interesting in secondary school classrooms.

In their opinion, it is an incredible system in the area of new technologies, original and it will suppose a big transformation in the training of deaf people, making training and academic courses more accessible for them. The main conclusions obtained were that they considered useful to be able to select the avatar main hand to sign, and the speed of the avatar while signing. Regarding the sign language must be extended with more vocabulary adapted to the specific areas and updated with neologisms. As for the application some signs were not clear enough and had little vocabulary, some movements were rough and needed to be smoothened, and the avatar had little facial expression. Finally, the application can be improve to be used in a short period of time in a concrete scenarios and more widely with several improvements and users tests.

CONCLUSION

In this chapter an automatic Spanish to LSE translator for academic purposes, from voice and PowerPoint data, was explained, reviewing all the application functionality and the results of the test carried out to obtain direct information from deaf people. After the test, the system was completed to incorporate some ideas and solve some problems detailed by the deaf group, but we still have some improvements to be done as future work. It is necessary to improve the avatar facial expression, adding gestures that complete the different signs and make them more understandable. It is important to review the clarity of all the vocabulary, making a deep test with deaf people. The improvement of the chat between teacher and student is been under development, to incorporate a visual interface with signs pictograms and animations in the student side, to facilitate its use by deaf people. After these improvements, a new test will be necessary to check if the system will be useful enough to incorporate it in some specific courses.

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Chapter 9

PERCEIVED COMMUNICATION ABILITY OF OPEN QUESTION INTERVIEW IN INDIVIDUALS WITH TRAUMATIC BRAIN INJURY (TBI): USING LA TROBE COMMUNICATION QUESTIONNAIRE

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ABSTRACT

We evaluated the perceived communication ability of 25 individuals with chronic traumatic brain injury (TBI) and 25 age-sex-education matched normal controls using an open questions interview format. Each participant completed the interview, which consisted of 21 open questions such as ‘What kind of people are your parents?’ as well as other linguistic and cognitive tests. Using audio recorded versions of the interviews, we rated their answers using the 27 subscales of the La Trobe Communication Questionnaire (LCQ), and evaluated the relationships between LCQ scoring and the other tests. There was a significant difference between participants with and without TBI for 18 of the 27 subscales of the LCQ. As for the 4 factors (Initiation/Conversational flow, Disinhibition/Impulsivity, Conversational Effectiveness, and Partner Sensitivity), the total score for each differed between the 2 groups. Furthermore, LCQ Factor 3 (Conversational Effectiveness) showed a significant correlation with duration of loss of consciousness. No measurements of linguistic and cognitive ability showed a significant relationship with LCQ factor scores. Our findings suggest that communication difficulties can persist for years after injury, which may be relatively independent from other cognitive abilities.

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INTRODUCTION

Traumatic brain injury (TBI) including closed head injury (CHI) generally results in some form of verbal communicative deficit. Among the various subtypes of communication disorder, pure aphasia is relatively rare. Many individuals with TBI demonstrate 'subclinical', non-aphasic, or subtle but important communication disorders, which emerge in everyday interpersonal situations [1, 2, 3, 4]. In addition, they may show relatively good formal aphasia test scores with poor communicative success, suggesting problems with the pragmatic and conversational aspects of language usage [3, 5, 6]. In an earlier study, Prigatano et al. described 3 major communication deficits of affected individuals; over-talkativeness, tangentiality, and use of peculiar phraseology [3]. Because of such deficits, they often utilize compensatory strategies while having a conversation [7]. Some with TBI develop speech patterns that are perceived by others as unintelligible, which can impact socialization, vocational outcome, and self-esteem [8].

Conversation is a dynamic and complex activity that requires participants to adhere to certain rules as they interact [9]. As Coelho noted, meaningful participation in a conversation requires that each participant has an ongoing awareness of the other's perspective or needs, and is able to initiate and change topics throughout the interaction, as well as inhibit comments and other behaviors that are inappropriate to the exchange, and continually monitor the overall flow of the conversation [9]. Conversations may be valid for assessing the pragmatic ability of individuals with TBI, as they are considered to be a form of two-way communication [10]. According to Body et al., in spite of terminological variation, 2 main approaches can be discerned from past studies of pragmatic skills in individuals with TBI [6]. The first is a generally applied pragmatic framework taken from a broad range of literature that employs some form of profile or checklist of abilities, while the second approach addresses a specific aspect of interpersonal communication from a pragmatic perspective [6].

Several investigations have been conducted to evaluate the pragmatic and conversational skills of individuals with TBI. For example, topic analysis is sensitive to problems with topic management in those with CHI, indicating that a lack of such abilities may be a core problem of conversation difficulties in individuals who have suffered a brain injury [11]. Coelho et al. noted that subjects with CHI had more difficulty initiating and sustaining conversations than normal controls [12]. In other studies, individuals with TBI seemed less engaged in conversations and more dependent on their partner to sustain the conversational flow [13], and often contributed information that did not facilitate the social interaction [14].

Inappropriate speech rate, i.e., too slowly or quickly, is also an important aspect of conversation. In ratings of verbal and non-verbal behaviors, a CHI group spoke significantly more slowly, less spontaneously, more monotonously, and for shorter durations [15]. Another CHI cohort needed extra time to process questions and formulate an answer [5]. Snow et al. also noted that reduced speed of information may contribute to not only selection, planning, an organization of ideas, but also to efficient auditory processing of the discourse of the conversation partner [16].

Conversation has an interactive nature, thus evaluation of the perceived impression of the conversational partner is important. In a previous study, the CHI group was considered to be less interesting and less likable, and seemed to have a lower level of social skills [15]. Some individuals with TBI seem to have great difficulty meeting the information needs of the

listener or monitoring their own excessive verbal output, and often show little eye contact and pay scant attention to listener feedback or non-verbal cues [8, 17, 18]. Thus, for a conversation partner, communication with individuals with TBI sometimes breaks tacit conversational rules.

As for conversational rules, Grice's conversational principle is a well-known theoretical base used for evaluating the validity of a conversation [19]. Grice contended that conversation is accomplished only by a cooperative effort between participants to achieve transmission of meaning [20] and defined 4 conversational maxims in this co-operative principle; Quantity, Quality, Relation, and Manner. Several measurements have been developed based on Grice's conversational principle, including the La Trobe Communication Questionnaire (LCQ), which has been found to be appropriate for evaluating spontaneous speech of individuals with TBI based on retrospective recall [21] and direct reviews of video recorded sessions [22]. It is also useful for collecting information from various sources including significant others and rehabilitation workers. The LCQ consists of 30 items and utilizes a Likert-type scale with the following possible levels of response for each question; (1) never or rarely, (2) sometimes, (3) often, and (4) usually or always. A higher score indicates increased difficulty with conversation. In terms of factor structure of the LCQ, Douglas et al. proposed a 7-factor model [23]. Thereafter, using a larger sample of individuals with TBI, Struchen et al. proposed a 4-factor model, as follows: Factor 1; Initiation/Conversational flow, Factor 2; Disinhibition/Impulsivity, Factor 3; Conversational Effectiveness, and Factor 4; Partner Sensitivity, which appears to have good face validity [24].

It is important to ask whether a conversational measure is sensitive to distinguish TBI from non-TBI subjects, as well as what components of conversation are perceived to be disordered in individuals with TBI. In a previous study of procedural discourse, the CHI group produced less essential information and relatively more unnecessary information than the non-CHI group [25]. Using the LCQ for measurement, significant differences were seen in 2 previous studies [24, 26]. However, some investigations have failed to distinguish the conversations of TBI individuals from those of normal controls. For example, Snow's analysis of semi-structured interviews between those 2 groups did not distinguish them [27], while Wozniak et al. used intonation unit analysis, but failed to differentiate between TBI and control groups [28].

It remains unclear whether cognitive measurements have relationships with conversational measurements, as the findings of previous studies are controversial. Snow et al. reported that conversational abilities showed moderately significant correlations with word fluency, memory measurement, and the results of Trail Making Test part B [16]. In contrast, McDonald and Pearce found correlations between pragmatic and executive communication ability, while memory measurements yielded no significant correlations [25]. Douglas reviewed studies that explored the associations between executive control processes and pragmatic impairment, and noted that it was surprising to find only relatively weak associations between them [26]. Variability in the measurement tools used may have contributed to these contrasting results.

In the present study, we analyzed audio-recorded interviews from individuals with and without TBI using the LCQ. We then attempted to answer the following questions.

1. Is the LCQ a sensitive conversational measurement tool able to distinguish TBI from non-TBI subjects?
2. What components of conversation are perceived to be disordered in TBI subjects?
3. Do cognitive measurement findings have relationships with conversational measurements?

METHODS

Subjects

The procedures used to recruit the subjects have been reported [29]. Briefly, we enrolled 26 individuals with TBI and 26 non-injured control (NC) individuals for the first stage. Inclusion criteria for the TBI subjects were as follows: (1) coma duration greater than 24 hours (i.e., suggesting severe TBI), (2) cognitive and/or behavioral problems related to TBI, (3) receiving specialized care for TBI, (4) no aphasia and able to talk and communicate with others, and (5) chronic stage of brain injury (>12 months after injury). The subjects in the TBI group were recruited from 6 rehabilitation facilities and 1 self-help group specializing in individuals with TBI (2 private cognitive rehabilitation facilities in Tokyo, 1 sheltered workplace in Kanagawa prefecture, 1 integrated rehabilitation facility in Ibaraki prefecture, 1 hospital outpatient clinic for individuals with brain injuries in Ibaraki prefecture, 1 self-help group for individuals with brain damage in Tokyo). All were given detailed information regarding the present study and provided written informed consent, and each met the criteria. The subjects in the NC group consisted of graduate school students, members of a poetry reading group, members of an orchestra group, and healthy elderly individuals who had registered with an out-placement office for elderly people in Tokyo. Exclusion criteria for the NC group were as follows: (1) past history of receiving psychiatric treatment for schizophrenia or mood disorders (e.g., depression), (2) past history of head injury with loss of consciousness, (3) past history of stroke, and (4) past history of any other disorders of the brain such as brain tumor. Among the 26 subjects in the NC group, 1 reported a past history of brain injury (motor vehicle accident) with loss of consciousness and was excluded, thus the NC group was finally comprised of 25 subjects. For the purpose of education-matching between the groups, the subject in the TBI group with the fewest years of education was excluded from further analysis. Thus, data from 25 individuals with TBI and 25 age-sex-education-matched control subjects were used in the present study.

As shown in Table 1, the mean age in the TBI group was 35.9 years (SD=10.3) and that was 36.6 years (SD=13.1) in the NC group. There were 4 (16%) females in the TBI group and 7 (28%) in the NC group. In the TBI group, the mean age at injury and duration after TBI were 23.8 years (SD=11.4) and 146.4 months (SD=100.8), respectively, while the mean period of unconsciousness was 30.2 days (SD=24.9). Most subjects in the TBI group (21 of 25) had received a brain injury due to a traffic accident.

The protocol of the present study was approved by the institutional review board of the Tsukuba Memorial Hospital Ethics Committee.

Table 1. Subject backgrounds

	TBI (n=25)	NC (n=25)	Statistics (t-test, Chi square test)
Age (SD)	35.9 (10.3)	36.6 (13.1)	n.s.
Sex (M/F)	21/4	18/7	n.s.
Age at time of brain injury (SD)	23.8 (11.4)	-	-
Months since injury(SD)	146.4 (100.8)	-	-
Loss of consciousness (days) (SD) ^a	30.2 (24.9)	-	-
Cause of injury			
Traffic accident	21 (84%)	-	-
Fall	3 (12%)		
Other (e.g., fight)	1 (4%)		
Years of education			
<10	1 (4%)	0 (0%)	n.s.
10-12	9 (36%)	4 (16%)	
13-15	9 (36%)	6 (24%)	
>15	6 (24%)	15 (60%)	

^a The precise number of days was not available for 2 subjects whose time of loss of consciousness was >24 hours.

PROCEDURES

Conversation Task

To examine spontaneous conversation, we conducted a semi-structured interview that consisted of 21 open-question items (Table 2). Most of the questions were regarding autobiographical memories and opinions about daily life. The subjects were interviewed individually in a quiet room and the instructions were given as follows. ‘I will ask you some questions. You can answer with whatever you want to say. Feel free to speak your opinion’. All speech was recorded by a digital audio recorder and later transcribed verbatim. The mean length of the interviews was 917.2 seconds (SD=347.3) in the TBI group and 678.6 seconds (SD=205.1) in the control group. For estimating perceived communication ability, the first author rated 27 of the 30 items of the LCQ while listening to the recorded audio data from each interview. We excluded questions 6 (‘Finds it hard to look at the other speaker’), 13 (‘Finds it hard to follow group conversation’), and 29 (‘Loses track of conversations in noisy places’) from our analysis, because these 3 items could not be examined by using audio data.

As noted above, the LCQ items were graded using a Likert-type scale, with the possible levels of response for each question, as follows: (1) never or rarely, (2) sometimes, (3) often, and (4) usually or always. Higher scores indicated increased difficulty with conversation. We rated each subscale from 1 to 4 based on the perceived frequency of occurrence, and then computed the total score of the 27 LCQ subscales and the sum of the 4 factors suggested by Struchen et al. [24]. Factor 1, Initiation/Conversational flow (questions 2, 5, 7, 8, 14, 16, 18, 26), is related to difficulties with starting and maintaining conversation. Factor 2, Disinhibition/Impulsivity (questions 9, 12, 17, 22, 24, 27), represents impulsive or disinhibited conversational behaviors, such as saying rude things. Factor 3, Conversational

Effectiveness (questions 11, 15, 19, 21, 23, 28), consists of items related to the effectiveness of conversation, such as being accurate and logical in expression, and having the ability to easily change speech style. However, these 6 items require reverse scoring. Factor 4, Partner Sensitivity (questions 3, 4, 10, 25), consists of items related to sensitivity to a conversational partner's needs, such as repeating information, talking about a topic for too long, and switching topics too quickly [24]. We did not include questions 6, 13, and 29 in our analysis, thus the total scores for Factor 1 and 2 might be lower than in other studies.

OTHER LINGUISTIC AND NEUROPSYCHOLOGICAL ANALYSES

All subjects were also administrated a battery of other standardized linguistic and neuropsychological tests aimed to evaluate cognitive competence regarding logical memory, working memory, and executive function.

LINGUISTIC TESTS

To test the relationship between the LCQ measurements and other spontaneous linguistic assessments, the Spontaneous Speech subtest from the Western Aphasia Battery (WAB) was also used [30, 31]. This subtest includes 2 measurements; (A) information content and (B) fluency, grammatical competence, and paraphasia. Both scales were rated from a score of 0 (very severe) to 10 (no problem).

Table 2. Twenty-one interview items used in the present study

- | |
|---|
| <ol style="list-style-type: none"> 1) How are you today? 2) Are you nervous for this interview? 3) What kind of people are your parents? 4) What kind of people are your brothers and sisters? 5) What do you do during the holidays? 6) What skills do you have? 7) When you were an elementary school student, what subject were you good at? 8) When you were an elementary school student, what subject were you bad at? 9) When you were an elementary school student, what was your dream for the future? Also, please tell me the reason. 10) When you were an elementary or middle school student, what club activities did you do? 11) Tell me a happy memory from when you were an elementary school student. 12) What are your strengths? 13) What are your weaknesses? 14) Where do you want to go to travel? Please tell me the reason. 15) What food do you like? Please tell me the reason. 16) Which do you like, dogs or cats? Please tell me the reason. 17) Why do some people believe in God? 18) In Japan, suicide is a matter of concern. What is your opinion about suicide? 19) Please tell your opinion about politics in Japan. 20) What was your experience with this interview? 21) Rate your speech today up to 100 points. |
|---|

The Japanese version of the National Adult Reading Test (JART) was also used to evaluate lexical knowledge for reading ideographic words [32, 33], with the number of correct readings of 50 JART stimuli (possible score 0-50) used for analysis.

MEMORY

Participants were administrated the Orientation, Logical Memory I and II, and Digit Span Forward and Backward subtests from the Wechsler Memory Scale Revised version (WMS-R) [34, 35]. Higher scores indicated higher function for each memory index.

EXECUTIVE FUNCTION

To evaluate executive function, Rule Shift Cards, and Key Search and Temporal Judgment subtests from the Behavioral Assessment of Dysexecutive Syndrome (BADS) [36, 37] were administrated. Each subscale was scored from 0-4 points, with higher scores indicating good performance.

STATISTICAL ANALYSIS

Independent t-tests were used to compare total scores, each item score, each factor score of the LCQ between the groups. To examine the relationships between the score of the LCQ factors and other cognitive measures, Pearson's correlation coefficient was employed. The level of significance was set at $p < 0.05$ (two-tailed test). All statistical analyses were performed using SPSS version 22 for Windows software.

RESULTS

Table 3 shows the mean scores for the TBI and NC groups for total LCQ score and each LCQ item. Independent t-tests revealed a significant difference between the groups for total score and 18 of the 27 subscales of the LCQ. The largest t-value was obtained for Question 10 ('Hesitates, pauses, or repeats him/herself?') ($t = 6.86$, $p < 0.01$).

As shown in Table 4, significant differences between the groups were seen for all 4 factors included in the analysis. For Factor 1 (Initiation/ Conversational flow), the TBI group had a score of 13.20 (SD=2.85) and the NC group 9.12 (SD=0.88) ($t = -6.82$, $p < 0.01$). For Factor 2 (Disinhibition/ Impulsivity), the TBI group had a score of 9.04 (SD=2.70) and the NC group 6.76 (SD=1.45) ($t = -3.72$, $p < 0.01$). For Factor 3 (Conversational Effectiveness), the TBI group had a score of 10.72 (SD=3.00) and the NC group 7.04 (SD=1.27) ($t = -5.63$, $p < 0.01$). For Factor 4 (Partner Sensitivity), the TBI group had a score of 6.72 (SD=1.70) and the NC group 4.64 (SD=0.70) ($t = -5.67$, $p < 0.01$).

Table 3. Mean, standard deviation, and t values for TBI and control subjects for each La Trobe Communication Questionnaire (LCQ) item

Items	TBI (n=25)	NC (n=25)	t value
Total score of LCQ	44.56 (7.20)	30.92 (3.45)	8.54**
1. Leave out important details?	1.92 (0.64)	1.28 (0.46)	4.06**
2. Uses a lot of vague or empty words such as 'you know what I mean' instead of the right word?	1.88 (0.67)	1.08 (0.28)	5.55**
3. Go over and over the same ground in conversation?	1.32 (0.48)	1.00 (0.00)	3.36**
4. Switches to a different topic of conversation too quickly?	1.04 (0.20)	1.04 (0.20)	0.0
5. Needs a long time to think before getting his/her message across?	2.44 (1.00)	1.48 (0.59)	4.13**
6. Finds it hard to look at the other speaker?	NA	NA	NA
7. Has difficulty thinking of the particular word he/she wants?	1.80 (0.71)	1.08 (0.28)	4.74**
8. Speaks too slowly?	1.60 (0.76)	1.08 (0.28)	3.20**
9. Says or does things others might consider rude or embarrassing?	1.28 (0.46)	1.04 (0.20)	2.40*
10. Hesitates, pauses, or repeats him/herself?	2.84 (0.85)	1.48 (0.51)	6.86**
11. Knows when to talk and when to listen?	1.12 (0.44)	1.04 (0.20)	0.83
12. Gets 'side-tracked' by irrelevant parts of the conversation?	1.60 (0.87)	1.08 (0.40)	2.73**
13. Finds it difficult to follow group conversations?	NA	NA	NA
14. Needs the other person to repeat what they have said before being able to answer?	1.36 (0.49)	1.16 (0.37)	1.62
15. Gives people information that is not correct?	1.64 (0.70)	1.12 (0.33)	3.36**
16. Makes a few false starts before getting his/her message across?	1.52 (0.65)	1.04 (0.20)	3.51**
17. Has trouble using his/her tone of voice to get the message across?	1.92 (0.95)	1.04 (0.20)	4.51**
18. Has difficulty getting the conversation started?	1.00 (0.00)	1.00 (0.00)	NA
19. Keeps track of the main details of conversations?	1.48 (0.65)	1.20 (0.41)	1.84
20. Gives answers that are not connected to the question?	1.48 (0.65)	1.00 (0.00)	3.67**
21. Finds it easy to change his/her speech style (e.g., tone of voice, choice of words) according to the situation he/she is in?	2.24 (1.09)	1.20 (0.41)	4.46**
22. Speaks too quickly?	1.12 (0.33)	1.20 (0.65)	-0.55
23. Puts ideas together in a logical way?	2.04 (0.84)	1.16 (0.37)	4.78**
24. Allows people to assume wrong impressions from his/her conversations?	1.84 (0.80)	1.16 (0.37)	3.85**
25. Carries on talking about things for too long in his/her conversations?	1.52 (0.96)	1.12 (0.44)	1.89
26. Has difficulty thinking of things to say to keep the conversation going?	1.60 (0.65)	1.20 (0.41)	2.62*

Items	TBI (n=25)	NC (n=25)	t value
Total score of LCQ	44.56 (7.20)	30.92 (3.45)	8.54**
27. Answers without taking time to think about what the other person has said?	1.28 (0.54)	1.24 (0.52)	0.27
28. Gives information that is completely accurate?	2.24 (0.78)	1.32 (0.48)	5.04**
29. Loses track of conversations in noisy places?	NA	NA	NA
30. Has difficulty bringing the conversation to a close?	1.48 (0.92)	1.08 (0.40)	2.00

*p<0.05, **p<0.01.

Table 4. Mean, standard deviation, and t-values for TBI and control subjects for each LCQ factor

Factors of the LCQ	TBI (n=25)	NC (n=25)	t value
Factor 1: Initiation/Conversational flow (questions 2, 5, 7, 8, 14, 16, 18, 26) ^a	13.20 (2.85)	9.12 (0.88)	-6.82**
Factor 2: Disinhibition/Impulsivity (questions 9, 12, 17, 22, 24, 27) ^a	9.04 (2.70)	6.76 (1.45)	-3.72**
Factor 3: Conversational Effectiveness (questions 11, 15, 19, 21, 23, 28)	10.72 (3.00)	7.04 (1.27)	-5.63**
Factor 4: Partner Sensitivity (questions 3, 4, 10, 25).	6.72 (1.70)	4.64 (0.70)	-5.67**

^a Note: We excluded questions 6, 13, and 29 from analysis.

Table 5. Pearson correlation coefficients for LCQ factors and background variables in TBI subjects (n=25)

	Age at investigation	Age at injury	Months since injury	Loss of consciousness (days) (n=23 ^b)	Years of education
Total score ^a	0.09	-0.30	0.44*	0.34	0.23
Factor 1: (Initiation/Conversational flow)	-0.03	-0.17	0.16	-0.02	0.10
Factor 2: (Disinhibition/Impulsivity)	-0.07	-0.14	0.06	0.27	0.30
Factor 3: (Conversational Effectiveness)	-0.08	-0.32	0.29	0.60**	-0.07
Factor 4: (Partner Sensitivity)	0.41*	-0.04	0.49*	-0.13	0.20

*p<0.05, **p<0.01.

^a Note: We excluded questions 6, 13, and 29 from analysis.

^b The precise number of days was not available for 2 subjects, both of whom whose time of loss of consciousness was over 24 hours.

Table 6. Pearson correlation coefficients for LCQ factors and other linguistic tests in TBI subjects (n=25)

	WAB spontaneous speech (picture of picnic)		JART
	A, information content	B, Fluency, Grammatical competence, and paraphasia	
Total score ^a	-0.33	-0.25	0.03
Factor 1 (Initiation/Conversational flow)	0.03	-0.08	-0.07
Factor 2 (Disinhibition/Impulsivity)	-0.35	-0.19	0.12
Factor 3 (Conversational Effectiveness)	-0.32	-0.34	-0.06
Factor 4 (Partner Sensitivity)	-0.18	-0.03	0.04

^a Note: We excluded questions 6, 13, and 29 from analysis.

Our analysis of background variables (Table 5) showed that age at investigation was significantly related to Factor 4 (Partner Sensitivity) ($r=0.41$, $p<0.05$). Furthermore, months since injury had significant associations with total LCQ score and Factor 4 ($r=0.44$, $p<0.05$, and $r=0.49$, $p<0.05$, respectively), while loss of consciousness had a significant relationship with Factor 3 (Conversational Effectiveness) ($r=0.60$, $p<0.01$).

In the results of the linguistic tests, WAB spontaneous speech subscales A (information content) and B (fluency, grammatical competence, paraphasia), and JART (ability to read Japanese ideographic words) were not significantly related to any of the LCQ factors (Table 6).

As for the other cognitive measurements, no pair showed a significant association. In other words, LCQ total score and the scores for each of the 4 factors had no significant relationship with memory or executive measurements (Table 7).

DISCUSSION

In the present study, individuals with TBI had different results as compared to the NC group for 18 of 27 items and all 4 factors of the LCQ. These results suggest that the LCQ conversational measurement tool is adequately sensitive to distinguish individuals with TBI from those without. Our findings are similar to a previous study in which TBI subjects performed significantly worse than their matched controls on the LCQ [24, 26]. In the present TBI cohort, the total score for the LCQ (44.56) was relatively lower than that in previous studies [21, 23, 24, 26], which may have been related to differences in the items employed. We excluded questions 6, 13, and 29 from analysis, hence the total scores for Factor 1 and 2 were decreased as compared to previous investigations.

The 5 items with higher scores in the TBI subjects were ‘5. Needs a long time to think before getting his/her message across?’, ‘10. Hesitates, pauses or repeats him/herself?’, ‘21. Finds it easy to change his/her speech style (e.g., tone of voice, choice of words) according to the situation he/she is in?’), ‘23. Puts ideas together in a logical way?’, and ‘28. Gives information that is completely accurate?’. Three of those (nos. 5, 10, 21) were also included in the top-10 frequency of difficulty ranking of Douglas [26], while numbers 5 and 10 belong to the Gricean manner domain. The largest difference was observed for Factor 1 (Initiation/Conversational flow), which is comprised of items related to difficulties with starting and maintaining conversations [24]. A higher score for that factor might be related to slowness, and use of vague or empty words. This result suggests that the most critical characteristic of conversation in individuals with TBI is a deficit of the ‘manner’ domain. This finding is also in accord with some previous studies. For example, individuals with brain injury were reported to require extra time to process a conversation [15]. Also, Penn and Cleary noted that TBI subjects used a wide range of compensatory strategies, including self-repetition, revision, and pausing [7]. In addition to narrative discourse [29], ‘time’ seems to be an important factor in conversations with individuals with TBI.

In the present study, the frequency of 2 items, i.e., ‘23. Puts ideas together in a logical way?’ and ‘28. Gives information that is completely accurate?’ were greater (i.e., worse score) than in the study of Douglas [26]. In contrast, 2 other items, ‘12. Gets “side-tracked” by irrelevant parts of the conversation?’ and ‘19. Keeps track of the main details of conversations?’ were not as high as compared to that study. These differences might be due to the different conversation tasks employed, as we used semi-structured interview data for assessment, whereas Douglas used daily conversation for evaluating with the LCQ. The semi-structured interview method requires higher levels of accuracy and logicity in spontaneous speech as compared to daily talk, and such a framework may make it easier for individuals with TBI to keep track of the main topics as compared to daily free conversation. Thus, the difference between our results and those of Douglas might be explained by these situational differences.

Our findings showed that months since injury had a significant correlation with total score for the LCQ and Factor 4 (Partner Sensitivity). Interestingly, conversational deficits increased with longer periods of time since the injury. This result seems unusual, because it is natural to anticipate that deficits in conversation would recover over the course of time. However, in our subjects with TBI, conversational deficits did not show such a natural recovery. Similar results were presented in a previous study, in which the conversational abilities of the TBI subject group, as measured by Clinical Discourse Analysis, did not improve over time [16]. Rousseaux et al. also concluded that communication disorders remain long after TBI [38].

Factor 3 (Conversational Effectiveness) showed a strong association with the length of loss of consciousness in the present study. That factor consists of items related to the effectiveness of conversation, such as being accurate and logical in expression, and having an ability to easily change speech style [24]. Therefore, logicity and accuracy in conversation may be vulnerable to brain injury.

Table 7. Pearson correlation coefficients for LCQ factors, memory, and executive function in TBI subjects (n=25)

	WMS-R					BADs		
	Orientation	Logical Memory I	Logical Memory II	Digit Span Forward	Digit Span Backward	Rule Shift Cards	Key Search	Temporal Judgment
Total score ^a	-0.22	-0.23	-0.21	0.18	-0.18	-0.36	-0.37	-0.10
Factor 1 (Initiation/Conversational flow)	0.00	-0.15	-0.24	-0.11	-0.21	-0.10	-0.26	-0.03
Factor 2 (Disinhibition/Impulsivity)	-0.14	-0.11	-0.03	0.27	0.07	-0.38	-0.16	0.13
Factor 3 (Conversational Effectiveness)	-0.33	-0.31	-0.33	0.26	-0.26	-0.35	-0.03	-0.17
Factor 4 (Partner Sensitivity)	0.06	0.05	0.08	0.02	-0.04	-0.08	-0.08	-0.02

^a Note: We excluded questions 6, 13, and 29 from analysis.

In terms of our third question, the relationships between conversational variables and cognitive measurements were shown to be weak based on our data. Namely, WAB spontaneous speech subtests, ability to read ideographic words, memory scale score, and scores for executive function were not significantly related to any factor of the LCQ. These results differed from those of Douglas [26], who found significant relationships between LCQ scores and executive function measured by an FAS verbal fluency task. This inconsistency could be explained by the differences in measurements of executive function. We employed 3 subtests of BADs for evaluating executive function. In contrast, an FAS verbal fluency task requires word retrieval skill. It seems plausible that FAS measurement results have a significant relationship to conversational competency, because the FAS may reflect verbal ability. Further detailed analysis is needed.

Conversation ability may be affected by other factors not examined in the present study. In recent reports, the importance of environmental factors, such as encouraging relationships with communication partners or empowering situations, have been recognized [10, 39, 40, 41, 42]. Togher et al. noted that the same subjects will show widely different communication behaviors according to whom they are interacting with [39], thus the conversation partner is important when evaluating everyday conversation [43]. Similarly, Kilov et al. found that empowering contexts (equal distance, knowledge) and meaningful interactions may reduce the necessity for additional prompting to sustain the flow of natural discourse, and affected individuals may eventually be able to show competence [44]. In the present study, the examiner unilaterally questioned the individuals with TBI and listened to their answers. This asymmetrical structure might have affected the quality of speech of our TBI subjects. Moreover, as McHenry and Wilson stated, psychosocial variables are also contributors to unintelligible speech [8]. Their case study illustrated that progress is impacted by pre-morbid personality, physiological status, cognitive deficits, and psychosocial history.

LIMITATIONS

Our study has some limitations. The validity and reliability of the Japanese version of the LCQ has not been confirmed. Since only a single examiner (first author) who was not blind to diagnostic information for the subjects rated the questionnaire, the results may be biased. Further examinations to develop the validity and reliability of the Japanese version of the LCQ are needed.

CONCLUSION

We evaluated the perceived communication ability of individuals with chronic TBI using an open questions interview format with 27 subscales of the LCQ and recorded audio from the interviews. We found a significant difference between participants with and without TBI for 18 of the 27 subscales in the questionnaire. As for the LCQ factors, the total score for all 4 (Initiation/Conversational flow, Disinhibition/Impulsivity, Conversational Effectiveness, Partner Sensitivity) differed between the groups. Furthermore, no other measurements of linguistic and cognitive ability showed a significant relationship with the LCQ factor scores. Our results suggest that communication difficulties persist for years after injury in affected individuals, while conversation seems to be relatively independent from other cognitive abilities.

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Chapter 10

**ANALYSIS OF NONVERBAL BEHAVIOR IN
AFFECTIVE DISORDERS IN CHILDREN AND
ADOLESCENTS WITH TYPE 1 DIABETES**

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ABSTRACT

The study of nonverbal behavior is important in objectifying and verifying the diagnosis of mental disorders. Also it is important in establishing correct diagnosis of affective disorders (anxiety and depression) in patients with type 1 diabetes using clinical and ethological methods. Ethological analysis of the behavior of children and adolescents with diabetes was conducted using adapted to the objectives of the study “Glossary of nonverbal human behavior”, which includes basic units, simple and complex forms of behavior, as well as their dynamics. Formalization of the severity of behavioral symptoms was carried out in accordance with the scale of human ethological features (Human Ethological Signs Scale, HESS), which provides a 7-point score for ethological expression. We have revealed and ranged several nonverbal patterns recorded with a frequency of more than 90%, which were of particular importance for ethological verification of anxiety in children and adolescents suffering from diabetes. Our results show that ethological analysis of nonverbal behavior in children and adolescents with type 1 diabetes significantly increases the information content of the clinical examination, contributes to objectification and verification of clinical and psychopathological data concerning the presence and severity of affective disorders caused by diabetes and allows one to confidently discriminate between depressive and anxiety disorders in the absence or even loss of verbal contact with the patient.

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INTRODUCTION

Nonverbal behavior (NVB) is a system of communication signals recorded in addition to verbal symbols in the visual, auditory, olfactory and tactile channels of information. According to the principles of ethology, NVB of all living creatures including humans, is the language of communication by which true intentions, desires, emotions are translated and perceived. That means the behavior always has a context and is filled with meaning and purpose.

NVB in humans allows one to send and receive from 65% to 80% of useful information within the individual and social communication areas. NVB features analysis provides description and interpretation of how a person moves, what are his gestures, facial expressions and poses in a particular environmental setting. Physiological systems based on their genotypes establish the projected internal scheme of NVB including an instinctive activity. Physiological and behavioral phenotypes are formed in the process of individual human development. The ratio of nonverbal versus verbal communication components in adult person at glance is shifted in favor of the latter, whereas NVB in children plays a major role in interpersonal communication.

NVB studies have objectifying and verifying values in mental disorders diagnostics, and often changes in NVB patterns precede clinical manifestation of the disease. NVB ethological analysis in patients with mental disorders is structured according to the system of behavior levels (Kornetov A.N.):

- 1) elementary behavioral units or motor act units – posture, facial elements, positions and movements of the hands, shoulders, torso, head, legs, nonverbal paralinguistic and prosodic speech components;
- 2) simple behavioral complexes – individual distance, orientation during contact, facial complexes, eye contact, gesture, motor skills of head, shoulders, torso, motor activities of grooming and manipulation;
- 3) sophisticated or contextual behavioral sets – sleep, locomotion, maintenance of body and clothing cleanness, comfortable / agonistic / territorial / migratory / simulation / feeding / dominance / search and exploratory / attention and contact behavior, demonstration of trust and submission.

Play as a sophisticated NVB form has gained importance in our study. Play behavior of children and adolescents had been evaluated during the “Diabetes School” training program and events dedicated to “Diabetes Day”.

Conditions for the assessment of NVB features were the same for all patients (physician’s office). The average length of ethological observation was 20-30 minutes. Single frame analysis of video-recorded behavior displays was performed for each observation.

MATERIALS AND METHODS

All children with type 1 diabetes included in the study were divided into two subgroups depending on the disease duration. The first subgroup was composed of 60 patients with

diabetes lasting of more than three years, whereas 27 children and adolescents with diabetes just manifested or lasting less than one year have formed the second subgroup.

Patients from both subgroups were matched for age and sex. All children were treated predominantly with basal and ultrashort insulin analogs acting in mode of intensified insulin therapy.

The study was carried out with the informed consent of the parents, in accordance with the ethical standards of Helsinki Declaration and Good Clinical Practice for Russian Federation, approved by the Ministry of Health.

Research methods included anamnestic method (life and disease anamneses, maternal history peculiarities), physical examination, laboratory and instrumental studies (glycemic profile, continuous glucose monitoring system CGMS Gold (Medtronic MiniMed, US).

Verification of anxiety and depression conditions during the study was performed with adapted to child's age Spielberger's State-Trait Anxiety Inventory (STAI) and Zung Self-Rating Depression Scale (SDS) with further diagnostics refinement using basic clinical psychopathological method. Anxiety was revealed in 63.3 % (1st subgroup) and 59.3 % (2nd subgroup) of studied children and adolescents, whereas depression was diagnosed in 45.0 % (1st subgroup) and 55.6 % (2nd subgroup), respectively.

Evaluation of nonverbal behavior of children and adolescents from both groups was performed using particularly adapted to the study objectives "Glossary of Nonverbal Human Behavior" which included information for elementary units, simple and complex forms of behavior, and their dynamics (Samohvalov V.P.; Eibl-Eibesfeldt I).

Formalization of behavioral traits degree was carried out in accordance with the Human Ethological Signs Scale (HESS) (Gilburd O.A.), which provided a 7-point ethological expression assessment. Normal behavioral sign expression was correspondent to 1 – 3 points, whereas 4 – 7 points were marking the presence of varying severity affective disorders.

NONVERBAL BEHAVIOR OF CHILDREN AND ADOLESCENTS WITH ANXIETY CAUSED BY TYPE 1 DIABETES

Nonverbal behavior of all children and adolescents with type 1 diabetes accompanied by anxiety disorders was characterized by the following features (Tables 1, 2):

- among registered elementary behavioral units we have observed: eyes running around and unblinking (fixed) gaze, lower lip trembling, tight / tucked lips, fixing both hands on an object (like a chair, etc.) or under the patient's armpits, one hand clenching other hand fingers, hand stroking another hand, raised shoulders, tense and periodically accelerated speech, voice tremor;
- among simple behavioral complexes there were detected: intense facial expressions of anxiety, expectation, alertness; facial expressions with a high mobility of eyebrows; a gesture of latent anxiety (a hand rubbing one's neck while stretching it); individual distance increase at the beginning of conversation followed by distance decrease at the conversation end; half-turned orientation during contact; head shaking or rocking; shoulders reaction (arms lifting while head lowering as a sign of fear or element of hiding); jumps at the sudden stimulus; jactation (body-rocking); intensive

auto-grooming (bringing oneself up, preening, correcting clothes, smoothing one's hairs, brushing from one's shoulders, rubbing one's face); intensive manipulation with an external object or with body part (earlobe, hairs), or with clothing; playing with fingers; biting lips (labiophagy);

- in the dynamics of both elementary units and simple behavioral complexes we have noted: restlessness in the form of polymorphic stereotypes of facial expressions, posture (jactation), head (nodding, rocking), hands (stroking, rubbing, playing with fingers, palpation); manipulation; gestures; grooming; motor acts of shoulders, feet (shuffling, blows with toe and heel, etc.); nonverbal speech components;
- in cases of sophisticated behavioral sets we have observed: intermittent sleep with frequent change of positions and early awakening; manipulation with food, licking, swallowing, oral motions without speech, indiscriminate eating habits, changes in meal schedule; looking around, neophobia as exploratory behavior features; cautious visiting of the physician's office, shuttle movements within area borders as features of territorial behavior.

The frequency of registered cases and the degree of expression of anxiety ethological signs based on a 7-point HESS scale for both subgroup of children and adolescents are presented in Tables 1, 2. Analysis of the Tables data shows that basic values in the subgroup of patients with type 1 diabetes lasting more than three years, i.e., the average frequency of registration of full ethological repertoire (80.6%) and the average degree of nonverbal signs of depression severity (5.49 ± 0.27) are higher than in the subgroup of patients with diabetes manifesting or lasting less than one year (74.4% and 3.81 ± 0.76 , respectively).

This means that nonverbal *anxiety* manifestations in chronically ill children and adolescents with diabetes are more diverse and more clearly marked than that of children with recently diagnosed disease.

Nonverbal patterns recorded at a frequency of more than 90% are of particular importance to ethological verification of anxiety in children and adolescents long suffering from diabetes. Among them to note are eyes running around, tucked lips, raised shoulders, tense and periodically accelerated speech, tense facial expressions of anxiety and expectation, latent anxiety gesture, jumps at the sudden stimulus; labiophagy in feeding behavior; food manipulation and licking, indiscriminate eating habits, changes in meal schedule; looking around and neophobia in exploratory behavior. In contrast, according to our data the most important nonverbal anxiety markers in children and adolescents with diabetes lasting less than a year were: tense and periodically accelerated speech, voice tremor, facial expressions with a high mobility of eyebrows, playing with fingers, and cautious visiting of the physician's office. In seven children and adolescents in the control group (14.8%) with anxiety revealed as a diseased state we have observed the same nonverbal signs with an average frequency of the full ethological repertoire (50.8%) and the average severity of 3.2 ± 0.57 points, which corresponds to moderate anxiety based on HESS evaluation. These figures generally comply with values ranging between health and slight pathology.

Children and adolescents from both studied groups without any marks of affective disorders revealed nonverbal signs of depression with an average frequency of 8.9% and median expression of 2.1 ± 0.2 points, which corresponds to the level of normal situational transitory reactions.

Table 1. The frequency and intensity of HESS-signs of anxiety in the 1st subgroup (n = 38)

Ethologic pattern	HESS-signs frequency		HESS signs intensity score
	abs.	%	Mean $\pm$ SD
Elementary Behavioral Units			
Eyes running around	38	100	6.00 $\pm$ 0.22
Unblinking (fixed) gaze	18	47.3	4.48 $\pm$ 0.19
Lower lip trembling	15	39.4	5.64 $\pm$ 0.33
Tight lips	29	76.3	5.80 $\pm$ 0.24
Tucked lips	35	92.1	4.92 $\pm$ 0.28
Hands fixing on object /armpits	26	68.4	5.68 $\pm$ 0.44
Hand fingers clenching	23	60.5	5.17 $\pm$ 0.34
Hand stroking hand	25	65.7	5.90 $\pm$ 0.26
Raised shoulders	38	100	5.12 $\pm$ 0.24
Periodically accelerated tense speech	38	100	6.01 $\pm$ 0.20
Voice tremor	28	73.7	6.14 $\pm$ 0.16
Simple behavioral complexes			
Intense facial expressions of anxiety, expectation, alertness	38	100	6.20 $\pm$ 0.30
High mobility of eyebrows	27	71.1	5.75 $\pm$ 0.26
Latent anxiety gesture	38	100	6.19 $\pm$ 0.18
Individual distance change	38	100	4.86 $\pm$ 0.24
Half-turned orientation	32	84.2	4.65 $\pm$ 0.40
Head shaking or rocking	17	44.7	5.83 $\pm$ 0.28
Shoulders reaction	33	86.8	5.68 $\pm$ 0.24
Sudden stimulus jumps	38	100	6.18 $\pm$ 0.32
Jactation	33	86.8	5.80 $\pm$ 0.28
Intensive auto-grooming	38	100	5.61 $\pm$ 0.26
Intensive object manipulation	15	39.5	5.47 $\pm$ 0.34
Playing with fingers	32	84.2	4.66 $\pm$ 0.30
Labiophagy	37	97.3	5.60 $\pm$ 0.21
Polymorphic stereotypes	34	94.4	5.22 $\pm$ 0.55
Sophisticated Behavioral Sets			
Intermittent sleep with frequent change of positions and early awakening	28	87.5	6.12 $\pm$ 0.18
Nutritional behavior: food manipulation, licking, swallowing, oral motions without speech, indiscriminate eating habits, changes in meal schedule	37	97.3	5.42 $\pm$ 0.22
Exploratory behavior: looking around, neophobia	38	100	4.61 $\pm$ 0.29
Territorial behavior: cautious visiting of the physician's office, shuttle movements within area borders	36	94.7	4.47 $\pm$ 0.18
Average frequency of registered events and expression of the full repertoire of ANXIETY ethological repertoire in the 1 st subgroup		80,6%	5,49 $\pm$ 0,27

Table 2. The frequency and intensity of HESS-signs of anxiety in the 2nd subgroup (n = 16)

Ethologic pattern	HESS-signs frequency		HESS signs intensity score
	abs.	%	Mean $\pm$ SD
Elementary Behavioral Units			
Eyes running around	8	50.0	4.28 $\pm$ 0.42
Unblinking (fixed) gaze	8	50.0	4.26 $\pm$ 0.86
Lower lip trembling	12	75.0	4.60 $\pm$ 0.86
Tight lips	9	56.25	4.35 $\pm$ 0.78
Tucked lips	11	68.75	4.36 $\pm$ 0.72
Hands fixing on object /armpits	12	75.0	3.61 $\pm$ 0.92
Hand fingers clenching	14	87.5	3.82 $\pm$ 0.86
Hand stroking hand	12	75.0	3.48 $\pm$ 0.88
Raised shoulders	14	87.5	4.24 $\pm$ 0.79
Periodically accelerated tense speech	16	100	4.11 $\pm$ 0.79
Voice tremor	15	93.75	4.17 $\pm$ 0.46
Simple behavioral complexes			
Intense facial expressions of anxiety, expectation, alertness	14	87.5	4.14 $\pm$ 0.94
High mobility of eyebrows	15	93.75	3.28 $\pm$ 0.91
Latent anxiety gesture	10	62.5	4.34 $\pm$ 0.86
Individual distance change	14	87.5	3.61 $\pm$ 0.90
Half-turned orientation	13	81.25	4.24 $\pm$ 0.81
Head shaking or rocking	14	87.5	3.46 $\pm$ 0.94
Shoulders reaction	12	75.0	4.31 $\pm$ 0.74
Sudden stimulus jumps	10	62.5	4.14 $\pm$ 0.44
Jactation	8	50.0	4.16 $\pm$ 0.68
Intensive auto-grooming	12	75.0	4.42 $\pm$ 0.54
Intensive object manipulation	10	62.5	3.34 $\pm$ 0.76
Playing with fingers	15	93.75	3.64 $\pm$ 0.84
Labiophagy	11	68.75	4.28 $\pm$ 0.81
Polymorphic stereotypes	14	87.5	3.40 $\pm$ 0.74
Sophisticated Behavioral Sets			
Intermittent sleep with frequent change of positions and early awakening	14	87.5	4.63 $\pm$ 0.69
Nutritional behavior: food manipulation, licking, swallowing, oral motions without speech, indiscriminate eating habits, changes in meal schedule	12	75	3.84 $\pm$ 0.72
Exploratory behavior: looking around, neophobia	11	68.75	3.67 $\pm$ 0.67
Territorial behavior: cautious visiting of the physician's office, shuttle movements within area borders	15	93.75	3.45 $\pm$ 0.86
Average frequency of registered events and expression of the full repertoire of ANXIETY ethological repertoire in the 2 nd subgroup		74.4%	3.81 $\pm$ 0.76

NONVERBAL BEHAVIOR OF CHILDREN AND ADOLESCENTS WITH DEPRESSION CAUSED BY TYPE 1 DIABETES

Nonverbal behavior of all diabetic children and adolescents from the main subgroup accompanied by depressive syndrome was characterized by the following features:

- in the registry of elementary behavioral units we have observed: avoiding eye contact, looking out the window or viewing of hands, inflating cheeks and lips, drooping mouth corners, raised inner edge of eyebrows, horizontal forehead wrinkles (with Veraguth's fold as optional feature found only in adolescents); lustreless eyes; transient elements – tears, crying facial expressions, submissive gestures (palm pressed to one's chest with a slight bow and head nod); hiding (covering) of one's groin with hands; standing and sitting postures with head down, hands wound back; crossed legs as groin hiding element; tendency to knee bending and further head lowering in standing position; quiet voice of low tone in nonverbal speech components, increased speech pauses during verbal contact as evidence of proximity of hidden (dissimulated) information and intentions; propensity to vowels stretching, increasing number of speech errors and verbal stereotypes throughout the contact;
- in the simple behavioral complexes registry there have been observed bias to increase individual distance, reduction of greetings complex, body orientation during interview similar to *phototaxis* (i.e., contact avoidance accompanied by turning aside to light source), auto-aggressive forms of auto-grooming, onychophagia and trichotillomania;
- in the registry of complex behavioral sets we have revealed inversion of "sleep – wake" rhythm; fetal sleep position; slow motion walking while preserving key elements of submissive posture; deactualization of hygienic, comfortable and search (research) behavior; actualization of imitative behavior in adolescents with increased risk of developing Werther syndrome (copycat suicide); anorexia in eating behavior; reduction in dominance within individual and subgroup territory; neglecting family roles, reduction of gaming activity.

During actualization of suicidal tendency in adolescents we have observed that signs of submission and obedience within elementary units of posture, gesture, facial expressions in simple and sophisticated behavioral sets were superseded with severe, persistent and prevalent signs of avoiding any form of contact (from ocular up to bodily) with others.

Also, their exploratory behavior was reduced to finding suitable area and methods for convenient implementation of auto-aggressive intentions.

The frequency of registration and expression of ethological signs of depression on a 7-point scale HESS in children and adolescents of both subgroups are presented in Tables 3, 4.

Analysis of these tables shows that in the subgroup of patients with diabetes experienced more than 3 years the average frequency of registration of full ethological repertoire (86.6%) and the average severity of nonverbal signs of depression (5.42 ± 0.29) are considerably higher than those among patients with manifesting diabetes manifesting or lasting less than one year (76.4% and 4.63 ± 0.58 , respectively).

Table 3. The frequency and intensity of HESS-signs of depression in the 1st subgroup (n = 27)

Ethologic pattern	HESS-signs frequency		HESS signs intensity score
	abs.	%	Mean ± SD
<i>Elementary Behavioral Units:</i>			
Eye contact avoidance	27	100	5.54 ±0.21
Looking out the window or viewing of hands	27	100	5.77±0.33
Inflating cheeks and lips	24	88.9	5.19±0.24
Drooping mouth corners	25	92.5	5.32±0.66
Sad or frowning eyebrows	22	81.5	4.51±0.52
Raised inner edge of eyebrows	22	81.5	4.19±0.28
Horizontal forehead wrinkles	21	77.8	4.22±0.31
Veraguth's fold (optional in adolescents)	11	41	5.88±0.22
Lustreless eyes	27	100	6.08±0.15
Tears, crying facial expressions	18	52.6	4.53±0.33
Submissive gestures	27	100	5.49±0.38
Groin hiding (covering)	27	100	6.11±0.15
<i>In standing / sitting postures:</i>			
Head down	15	55.5	5.48±0.44
Hands wound back	13	48.1	4.77±0.22
Shoulder lessening	18	66.7	6.06±0.21
Crossed legs as groin hiding element	27	100	5.88±0.33
Tendency to knee bending and further head lowering in standing position	27	100	5.72±0.18
<i>In nonverbal speech components:</i>			
Quiet voice	27	100	5.52±0.29
Low tone	22	81.5	4.21±0.45
Increased speech pauses	27	100	6.11±0.12
Propensity to vowels stretching	24	88.9	4.33±0.24
Increasing number of speech errors	26	94.7	5.91±0.17
Increasing number of verbal stereotypes	27	100	5.90±0.35
<i>Simple behavioral complexes:</i>			
Bias to increase individual distance	27	100	6.09±0.14
Reduction of greetings complex	27	100	5.11±0.49
Phototaxis-like body orientation	27	100	6.11±0.24
Auto-aggressive forms of auto-grooming	21	77.8	5.29±0.42
<i>Sophisticated Behavioral Sets:</i>			
Insomnia, "sleep – wake" rhythm inversion, fetal sleep position	27	100	6.22±0.25
Slow motion walking with preserved submissive posture elements	27	100	5.90±0.19
Deactualization of hygienic, comfortable and search (research) behavior	24	88.9	5.16±0.62
Actualization of imitative behavior with risk of Werther syndrome (adolescents only)	15	55.6	5.88±0.26
Anorexia	16	59.2	4.45±0.21
Dominance reduction within individual and subgroup territory	27	100	6.08±0.11
Neglecting family roles	27	100	5.82±0.19
Reduction of gaming activity	24	100	4.87±0.09
Average frequency of registered events and expression of the full repertoire of DEPRESSION ethological repertoire in the 1 st subgroup	86.60%		5.42±0.29

Table 4. The frequency and intensity of HESS-signs of depression in the 2nd subgroup (n = 15)

Ethologic pattern	HESS-signs frequency		HESS signs intensity score
	abs.	%	Mean ± SD
<i>Elementary Behavioral Units:</i>			
Eye contact avoidance	11	73.3	4.30±0.32
Looking out the window or viewing of hands	12	80	4.20±0.68
Inflating cheeks and lips	12	80	4.33±0.45
Drooping mouth corners	13	86.7	4.31±0.69
Sad or frowning eyebrows	10	66.7	4.30±0.45
Raised inner edge of eyebrows	10	66.7	4.10±0.67
Horizontal forehead wrinkles	11	73.3	4.01±0.60
Veraguth's fold (optional in adolescents)	3	20	4.67±0.33
Lustreless eyes	12	80	4.33±0.76
Tears, crying facial expressions	10	66.7	4.10±0.71
Submissive gestures	13	86.7	4.60±0.87
Groin hiding (covering)	11	73.3	4.73±0.48
<i>In standing / sitting postures:</i>			
Head down	13	86.7	4.07±0.68
Hands wound back	11	73.3	4.54±0.45
Shoulder lessening	14	93.3	4.86±0.71
Crossed legs as groin hiding element	15	100	5.20±0.73
Tendency to knee bending and further head lowering in standing position	12	80	4.67±0.89
<i>In nonverbal speech components:</i>			
Quiet voice	14	93.3	5.13±0.71
Low tone	9	60	4.08±0.74
Increased speech pauses	15	100	5.20±0.73
Propensity to vowels stretching	12	80	4.42±0.53
Increasing number of speech errors	14	93.3	4.93±0.57
Increasing number of verbal stereotypes	15	100	4.63±0.69
<i>Simple behavioral complexes:</i>			
Bias to increase individual distance	11	73.3	5.67±0.89
Reduction of greetings complex	10	66.7	4.80±0.87
Phototaxis-like body orientation	12	80	5.47±0.71
Auto-aggressive forms of auto-grooming	9	68.4	4.04±0.53
<i>Sophisticated Behavioral Sets:</i>			
Insomnia, "sleep – wake" rhythm inversion, fetal sleep position	13	86.7	5.27±0.76
Slow motion walking with preserved submissive posture elements	15	100	4.73±0.75
Deactualization of hygienic, comfortable and search (research) behavior	12	80	4.33±0.78
Actualization of imitative behavior with risk of Werther syndrome (adolescents only)	3	20	4.67±0.33
Anorexia	6	40	4.92±0.93
Dominance reduction within individual and subgroup territory	11	73.3	5.07±0.69
Neglecting family roles	11	73.3	4.67±0.98
Reduction of gaming activity	15	100	6.01±0.31
Average frequency of registered events and expression of the full repertoire of DEPRESSION ethological repertoire in the 2 nd subgroup	76.4 %		4.63±0.58

This means that nonverbal *depression* manifestations in chronically ill children and adolescents with diabetes are more diverse and more clearly marked than that of children with recently diagnosed disease.

Therefore ethological parameters of depression associated with type 1 diabetes are identical to clinical and psychopathological characteristics of anxiety outlined above.

Nonverbal patterns recorded at a frequency of more than 90% are of particular importance to ethological verification of depression in children and adolescents long suffering from diabetes. Among them to note are avoiding eye contact, looking out the window or viewing of hands, inflating cheeks and lips, drooping mouth corners, lustreless eyes, submissive gestures, covering of one's groin with hands, tendency to knee bending and further head lowering in standing position, quiet voice, increasing of speech pauses, errors, verbal stereotypes, bias to individual distance increasing, reduction of greetings complex, body orientation during interview similar to phototaxis, insomnia, inversion of "sleep – wake" rhythm; fetal sleep position; slow motion walking while preserving key elements of submissive posture, reduction in dominance within individual and subgroup territory, neglecting family roles, refusal of gaming activity.

In turn, among the most important nonverbal markers of depression in children and adolescents with recently diagnosed type 1 diabetes lasting up to one year, we have observed: reduction of the shoulder, crossed legs as part of hiding one's groin, quiet voice, increasing speech pauses, errors, verbal stereotypes, slow motion walking while preserving key elements of submissive posture, refusal of gaming activity. We have observed the same nonverbal features in six (12.8 %) children and adolescents from the control subgroup with clinically revealed light depression. The average frequency of the full repertoire was 71.4 %, with average severity score of 4.08 ± 0.11 points, thus corresponding to "middle" level of HESS. Depressive nonverbal signs in children and adolescents from both groups with no affective disorders were registered with average frequency of 9.4 % (mean expression 2.02 ± 0.13 points), which corresponds to the level of normal situational transient responses.

In general, these results show that ethological analysis of nonverbal behavior in children and adolescents with type 1 diabetes: (1) significantly increases the information content of the clinical patient examination; (2) contributes to objectification and verification of clinical and psychopathological data concerning the presence and severity of affective disorders caused by diabetes; (3) allows one to confidently discriminate between depressive and anxiety disorders in the absence or difficulty of verbal contact with the patient.

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Chapter 11

**ESTABLISHING GRAMMATICAL COHESION
IN KENYAN SIGN LANGUAGE (KSL)
FORMAL DISCOURSE:
THE CASE OF A SERMON DELIVERED IN KSL**

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Cohesion: it is the first standard of textuality; it refers to the surface relations between the sentences that create a text i.e., to create connected sentences within a sequence. The formal surface of the text components works according to grammatical forms and conventions. It helps the reader/hearer to sort out the meaning and uses. (Besma, Azzouz (2009)).

ABSTRACT

Religious beliefs can be expressed in distinct language varieties – one such variety is the language of the sermon which Crystal and Davy (1969) say, “Has more in common, stylistically with other forms of public speaking.” Being a form of moral statement aimed at dictating a certain kind of behavior through such strategies as stories, or examples, a sermon’s manner of presentation is formal. This paper focuses on how content is structured in formal KSL discourse – a sermon. It focuses on grammatical cohesion. Grammatical cohesion is about how content is structured through textual features that link episodes together in discourse. In discourse, there are elements that are not part of the content but they help in guiding the reader/listener to interpret information. The flow of the topic can therefore be understood through guidance from structural organization, or through cohesive devices. The structuring of content in discourse through the use of structural devices or linguistic features that mark transition help in establishing cohesion.

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This paper is concerned with how cohesion is established in a KSL sermon through reference, substitution, ellipsis, discourse markers and conjunctions.

1. INTRODUCTION

According to Jacobs (2012), a sermon is a form of a lecture or discourse given for the purpose of providing religious instruction or inculcating moral behavior. Usually doing this using a text (or texts) from Sacred Scripture and Church teaching as a point of departure, a sermon directly addresses human conduct from a Judaeo-Christian and Roman Catholic perspective with the explicit intent to either exhort or to rebuke the people seated in the congregation. The goal of a sermon is to get the people in the congregation to change their moral behavior.

The Longman Dictionary of Contemporary English defines a sermon as a religious talk given as part of a Christian church service usually based on a verse from a Bible. The *Collins Concise Dictionary* on its part defines a sermon as an address of religious instruction or exhortation often based on a passage from the Bible especially delivered during a church service.

The definitions above clearly mark out a sermon as part of a church service. Our analysis therefore is not of the full church service but of the sermon delivered in KSL. The sermon under study took about one hour including the dramatization that preceded it.

A sermon's manner of presentation is formal. This formality in manner of presentation is a reflection of the relationship that exists between the minister or preacher and his congregation. Notably also, is the fact that these religious statements based on a particular moral or spiritual view of the word (sermon) can be written as speeches and delivered to a congregation or they may be spoken spontaneously and be given as an extemporaneous sermon. The sermon under analysis was a spontaneous one. Since no notes were used during this particular sermon, it can thus be classified as a textual sermon – that is one that limits itself to one certain thought or a topic suggested by particular scripture text. In this case the topic being the times of Jesus Christ - that is his birth, crucifixion and resurrection. This sermon under analysis also uses other means such as drama to visually depict the theme or point of the sermon; thus it can also be viewed as an illustrated sermon. In this paper, we view a sermon as a speech event in a particular social. The setting for the sermon under analysis is the church hall.

Kenyan deaf people have a unique way of conducting a church service especially in as far as the sermon is concerned. The sermon under analysis is divided into three distinct parts:

- The pre-sermon exposé (prologue)
- A play which solidifies the pre-sermon exposé
- The sermon itself.

A different person from the one who conducts the sermon conducts what we have called the pre-sermon exposé.

Following Cook (1975), the pre-sermon exposé (prologue) mentioned above can be divided into the following episodes:

- An obligatory focal episode (introduction)
- An obligatory developmental episode
- An obligatory closing episode.

The obligatory focal episode talks about the arrest of Jesus and the suffering he went through. The developmental episode focuses on the crucifixion of Jesus. The play, which comes immediately after the prologue is a dramatization of what has been talked about in the prologue or pre-sermon exposé.

The sermon itself can be analyzed structurally as follows:

The death of different prophets before Jesus, the birth of Jesus, the life and times of Jesus, his resurrection and the importance of his resurrection to salvation.

Though we are aware that flow of the topic can be understood through guidance from structural organization, this analysis however focuses on how content is structured through textual features that link episodes together in discourse.

Discourse analysis examines the highest-level units of meaning – and transitions that occur between them in a larger context. “It is a linguistically sensitive and holistic way of reading texts as communicative acts” Streett (2001). In discourse, there are elements that are not part of the content but they help in guiding the reader/listener to interpret information. The structuring of content in discourse through the use of structural devices or linguistic features that mark transition help in establishing cohesion. However, where content is structured in such a way that no overt features are used but continuity of meaning can help readers or listeners discern the transition, coherence on the other hand is established.

The sermon as indicated earlier was delivered in Kenyan Sign Language (KSL). Kenyan Sign Language, can be defined as a patterned visual gesture language used by people who are deaf (and hearing people who have learnt it) for communication. People who are deaf in Kenya are members of the Deaf culture and are therefore users of a different language from that of the dominant hearing culture. This makes sense when one thinks of language as consisting of a system of conventional and arbitrary symbols (audio or visual) determined by a culture. Samovar et al. (2006). Thus different cultures evolve different languages. In the culture of spoken language words are used and in the culture of people who are deaf, signs are used. A person who is deaf cannot make use of the vocal - auditory channel (used by the majority) for communication. However, as Yule (2006) points out: “... the use of the vocal-auditory channel is certainly not a defining feature of human language.”

Thus KSL a visual- gestural language is a language on its own right since it satisfies all the conditions that have come to be known as properties of human language viz: displacement, discreteness, duality, arbitrariness, cultural transmission and productivity/creativity (Cf Abercrombie (1968); Okombo (1992).

2. REVIEW OF LITERATURE

One valuable article to our study is Roy's (1989) article on “*Features of Discourse in an American Sign Language Lecture.*” In this article, Roy examines the features of discourse that occur in a lecture given in American Sign Language (ASL). Though there are certain distinctions between the two studies in terms of the two languages i.e., one is on KSL and the

other on ASL and despite the fact that Roy's study is on a lecture while the current one is on a sermon, both studies are formal in nature thus Roy's article benefitted our research immensely. For example Roy identified categories of discourse markers in ASL such as: Head nodes, the sign OK and ANYWAY and the lexical sign NOW, NOW THAT etc. Since our study is about how content is structured in discourse through the use of structural devices or linguistic features that mark transition by helping in establishing cohesion, Roy's article was valuable through the identification of discourse markers. Zimmer article in Ceil, L (ed.) (1989) entitled "*Towards a Description of Register Variation in ASL*" describes the use of language sensitive to situational factors which is also the concern of our research. Zimmer videotaped native ASL users in three different situations: A formal lecture in an academic setting, an informal talk and a television interview. The paper though on ASL, helped us gain insight into discourse analysis in SL in general and especially on the formal use of language in a lecture.

A paper in Ochs and Bennett (1977) *Discourse Across Time and Space* by Elinoor entitled "*Why look at unplanned and planned discourse*" gave us an insight into the characteristics of both planned and unplanned discourse. The sermon the subject of our analysis falls under planned discourse.

Theoretically, though the following texts deal with theories of DA based on spoken language, they were valuable references: Schiffrin (1994) *Approaches to Discourse*, Brown and Yule (1983), *Discourse Analysis*- both texts provided background information on the different approaches available in the analysis of discourse. In terms of theoretical issues that specifically deal with sign language, Zimmer (1989) article on "*Towards a Description of Register Variation in American Sign Language*" in Ceil, L (ed.) (1989) was important to our research. This text reviews models of register variation generally and specifically those of ASL. Since our study is about differential use of language specifically in KSL, the models of register variation discussed in Zimmer above assisted us in our analysis of KSL grammatical cohesion.

Halliday and Hasan (1976) examined cohesion and presented a taxonomy of various types of cohesive ties which included:

- Reference – Including antecedents, anaphor relations, the definite article "the" and the demonstrative pronouns.
- Substitution- including such various pronouns and ellipsis
- Conjunctions, involving words like, and, but, yet etc.
- Lexical cohesion- repeated occurrence of the same related lexical items (not the concern of this analysis).

This taxonomy is relevant in the examination of cohesion in KSL formal discourse – a sermon since our focus will be on matters such as reference, substitution, ellipsis, discourse markers and conjunctions.

3. METHODOLOGY

The sermon under analysis was videotaped at All Saints Cathedral in Nairobi. It was given to an all-deaf audience of about 30 people and it was done in Kenya Sign Language

(KSL). Simon Ngigi a deaf preacher delivered the sermon. His preaching organized its message into a sermon - a speech with an organized collection of thoughts. The video tapes containing the sermon were transcribed and analyzed to discover the discourse features used in planned discourse and any situational factors that trigger the use of those discourse features in planned discourse in KSL specifically a sermon.

It is important to note that KSL like most signed languages does not have a written format. The following conventions are used during the glossing; a single slash/stands for a “comma” while a double slash//stands for a “full stop.” Similarly, in the examples of sentences given, the KSL text is written in capital letters to show that the English words used represent signs in KSL and not words in English. The capital letters represent the idea rather than the word.

The following methods of data elicitation were used in this research. The collection of data took a multiple- technique approach. The techniques used include: Introspective evidence, Analytical evidence and Participant observation. The researcher relied on his near native speaker’s competence in inferring important linguistic structures of KSL in the collection of data introspectively. To check on the existence of biases on the part of the researcher, the data was cross checked with native speakers of the language. Deaf research assistant’s video recorded the KSL formal use in the sermon. Participant observation also was used with the researcher playing an established participant role at the scene of study. In this research, the researcher was a non participant observer in the sermon.

4. THEORETICAL FRAMEWORK

This study uses a theoretical framework as its descriptive tool to guide it in terms of what it shall measure or look out for. A theoretical framework is a collection of interrelated concepts just like a theory but in a theoretical framework the concepts are not well worked out nevertheless it makes use of the interrelated concepts in a new way to explain the relationship between those concepts.

Since a theoretical framework interrelates to various theories it allows for an eclectic approach in the analysis of data. The analysis of data in this paper is therefore guided by an eclectic approach.

For instance, in this paper we use the discourse analysis approach used by Halliday and Hasan (1985) who examined cohesion and presented taxonomy of various types of cohesive ties which were used in the analysis of our data.

Similarly, Halliday (1976) also proposed a model that consisted of the field of discourse, the mode of discourse, the tenor of discourse. A fourth category was later added by Gregory and Carroll (1978) – the functional tenor. This model is used in our data analysis to characterize speech situation under analysis for example we were able to analyze the physical setting and social activities that surround and define a speech event in this case a planned speech event – a sermon.

Joss (1968) on the other hand posits five styles ranging from least formal to most formal. These styles include: Intimate, casual, consultative, formal style and frozen. The Consultative style, which we view as an in-between the casual and formal style was essential in our

analysis of formal discourse. Similarly, formal and frozen styles are used in the analysis of planned discourse since they are styles used in formal situations.

Crystal and Davy (1969) discuss factors that help determine language use. They mention three categories of features within their model that in part determine the type of utterances prescribed in particular situations: Province features, status features and modality features. These features assisted us in the analysis of our data since they are basically contextual factors and contextual use of language is the concern of this study.

Ferguson (1959) identified separate spoken language varieties specified for function in a diglossic situation. He identified high (H-) variety - used in formal situations and the low or (L) variety used in colloquial situations. Fischer (2000) also discussed bilingual situations in which one language (SL) plays both roles i.e., H-role and L-role. Different features mark these two. For example, formal or H- role language the concern of this paper, is slower paced, uses large signing space, more clear and more fully executed, uses two- handed variant of signs, non- manual grammatical features (NMG) have to appear with the manual ones. Though based on ASL, these models (Ferguson, Fisher) were useful in the analysis of KSL especially at the level of Formal discourse (H-variety).

5. DISCUSSION: GRAMMATICAL COHESION IN A KSL SERMON

Cohesion generally involves those surface and underlying elements which provide a text with syntactic and semantic unity or what has been referred to as rhetorical glue that binds units together. In this way then cohesion assist readers or listeners see the many parts of a discourse segment and how they are related to one another. Cohesion devices therefore enable us “see the whole animal.” Discourse elements in a text are united by certain links and connections. These links and connections are what are referred to as cohesion devices. They help discourses like sermons to achieve their informational social function. A listener or reader is normally tasked with the charge of interpreting a text. This task is aided by the fact that the writer or speaker guides his reader or listeners through the use of various linguistic devices, which help them, imbue the representation with far more information than that which is overtly present. Cohesion devices make a text cohere through the use of language forms to indicate semantic relations between elements in a discourse. In this analysis of the KSL sermon, we examined cohesion devices in categories of grammatical cohesion.

Grammatical cohesion deals with cohesive devices such as reference, ellipsis, substitution, conjunctions etc. The taxonomy of cohesive devices that are used to achieve grammatical cohesion in the sermon will be examined following Halliday (1985), Halliday and Hasan (1976), Hasan (1971). These devices are exemplified below:

Reference	Proforms
Substitution	
Ellipsis	Ellipsis
Lexical cohesion	Lexical relationships
Conjunction	Connectives

6. GRAMMATICAL COHESION

Cohesion can be viewed as the relations of meaning that exists within a text and that define it as a text. Cohesion can be established in a text either through grammar or through vocabulary. Where it is established through grammar, grammatical cohesion is established, while where it is established through vocabulary, lexical cohesion is achieved. In this section we examine grammatical cohesion the focus of this analysis. Grammatical cohesion relates to the many grammatical devices that can be used to make relations among sentences more definite. Cohesive devices are therefore used to tie pieces of text together in a special way with the aim of helping the reader or listener understand the items referred to, the ones replaced and even the items omitted. Harmer (2004). Furthermore, the combination of sentences using cohesive devices which have semantic relation need a shared linguistic environment for their interpretation. Grammatical cohesion as earlier indicated is concerned with matters such as reference, substitution, ellipsis, discourse markers and conjunctions which will be discussed below.

a) Reference

Brown and Yule (1983) view reference as the relationship which holds between words and things since words refer to things. This view is also held by Strawson (1950) when he claims that referring is not something an expression does; it is something that someone can use an expression to do. From the above therefore, reference denotes recurring expressions that designate the same entity in a text. They correlate lexical recurrence with conceptual recurrence, Beaugrande and Dressler (1981). Reference elements in a text establish a semantic relationship between them in which one of the elements provides the other with meaning.

Halliday and Hasan (1976) establish two types of reference.

1. Situational reference (exophora) deals with elements that refer to the “shared world” outside of the text.
2. Textual reference (endophora) refers to referring elements within the text.

Of the two, endophoric and exophoric reference, endophoric reference is said to be cohesive and will therefore be the focus of our analysis. However, it is important to note that both endophoric and exophoric reference act together to create texture. Texture being the quality of functioning as a unit. For a text to have texture, it must include “ties that bind together” or cohesive ties. However, creation of texture in a text is not the preserve of cohesion alone. Texture is created within text when there are properties of coherence and cohesion, outside of the apparent grammatical structure of the text. Endophoric reference is divided into Anaphoric (this refers to preceding elements) and Cataphoric reference (this refers to following elements).

Endophoric reference in this sermon manifests these ties through:

- Personal references
- Demonstrative references.
- Comparative reference.

All these different types of references help create reference cohesion.

i) Personal Reference

Personal reference includes personal pronouns, possessives, determiners and pronouns. Personal pronouns refer to reference by means of function in the speech situation through the category of person. The category of person describes the number and kind of participants involved in a speech situation. Person is categorized thus:

1st person – the speaker

2nd person – the hearers or readers being addressed

3rd person – other people, animals, or objects being talked about.

In the sermon under analysis, the following identified personal pronouns were used:

YOU, I, WE, HIM, US, ME, HE

In the sermon, the personal reference pronouns can be categorized into those that refer to the speaker or signer and those that refer to the addressee.

1) Those that refer to speaker or signer

These are referring expressions that refer to given entities – that is the first person in KSL. They mark for number thus they appear in both singular and plural. The first person pronouns used are **I** (singular) and **US** (plural) together with their derived forms **ME** and **WE** respectively. They appear in sentences as exemplified below.

1 a) **I KNOW YOU LOOK JESUS BUT**
I know you are looking for Jesus but he
NOW JESUS THERE NO! NO! /ALIVE
is not there anymore. He is alive again.
AGAIN//

b) **HOLIDAY TIME/I WOULD LIKE SEE**
Holiday time I wouldn't want to see
JESUS ON CROSS NO NO/ MAN BLOOD
Jesus on the cross, his blood and
DON'T LIKE INCLUDE NAILING ON
his nailing on the cross.
CROSS//

c) **STAND THERE NEAR DEAD SEE**
They stood near the tomb and saw a group

OTHER JESUS GROUP TOGETHER
 of Jews together with group of teachers
 GROUP TEACHER COME MEET
 going to see the king. They were asked to
 KING/ASK US REMEMBER JESUS
 remember the fact that
 ALIVE THERE JOKE BIG//
 Jesus is alive was a big joke.

d) FEAR NOT/**ME** KNOW YOU LOOK
 Don't fear I know you are looking for Jesus
 JESUS/BUT THERE JESUS NOTHING/
 But Jesus is not here
 JESUS ALIVE AGAIN//
 He is alive again.

e) YOU AFRAID NO/**ME** ASK **YOU**
 Don't be afraid I am asking you to tell
 TELL FOLLOWERS MINE GO GALILEE
 My followers to go to Galilee
 ME THERE//
 I will be there.

In KSL **I**, or **ME** is signed with the index-finger hand form making contact with the signer's chest as illustrated below:



I/ME

Since pronouns are noun equivalents, they function like nouns. Thus the pronouns in (1 a-b) are subjects of the verbs. In 1 (a) the pronoun **I** is subject of the verb **KNOW**. It describes the person who is talking. In 1 (b) **I** also appears utterance initial as the subject of the verb **WOULD**. **ME**, the derived form of **I** also appears in same positions. It appears as the subject of the verb **KNOW** in 1 (d) and the subject of the verb **ASK** in 1 (e). From the above examples, in KSL, what refers to speaker or signer link the speaker cataphorically to other information in the text as exemplified by **I** and **ME** which appear sentence initially in KSL because they are subjects of the sentences.

US in 1 c) the plural of **I** appears sentence medial while it's derived form **WE** appears sentence initial. **WE** or **US** in KSL is signed as illustrated below:



WE/US

It appears that in KSL **US** is the only pronoun that refers to the signer that can appear sentence medial and thus link information anaphorically by referring to the people who were standing near Jesus' tomb (1c above).

2) Those that refer to addressee

Personal reference can also refer to the addressee. These are the second and third person reference pronouns. Those identified in our text include:

	Singular	plural
2 nd person	YOU	YOU
3 rd person	HE/HIM -	

YOU is signed with the index-finger hand form pointing at the reference (see illustration below).



YOU

In KSL, the second person singular and plural is signed **YOU**. **HE** and its derived form **HIM** is the third person personal pronouns used in our text. The use of these pronouns can be exemplified in sentences below:

2 a) I KNOW **YOU** LOOK JESUS BUT
 I know you are looking for Jesus but he is
 NOW JESUS THERE NO NO/ ALIVE
 Not there He is alive again.
 AGAIN/ ANGEL SAY **YOU** LIKE

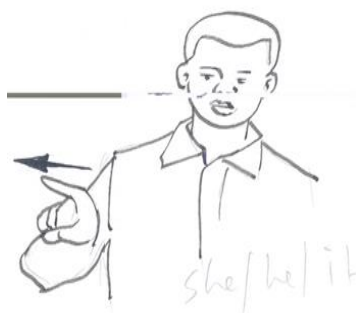
The angel said if you would
SEE WELCOME//
Like to confirm you are welcome.

b) TODAY GOD ARISE **YOU** DEAD
Today God has resurrected you from the
ALIVE AGAIN// FIRST GOD AROSE
dead you are alive again. First Jesus was
FOR **YOU** FROM DEAD//
resurrected from the dead for you.

c) OTHER PERSON NAME JOSEPH
Another person called Joseph whose sign
SIGN RICH/ COME ASK SOLDIER
name is Rich came and asked the guards to
PLEASE GIVE JESUS BODY TO ME/
give him Jesus' body The guard ordered him
THIS SOLDIER ORDER **YOU** GO ASK
to go and talk to their boss.
OTHER. SOLDIER BOSS//

YOU, a second person pronoun in KSL is a pointing sign just like **I**. It is used deictically to point at the addressee. The context of use will be the determinant as to whether it is being used in the singular or plural form. In 2 (a-b) **YOU** is used as a plural while 2 c) is an example of **YOU** used as a singular pronoun. In 2 (a) **YOU** refers deictically to the people who were looking for Jesus. In 2 (b) **YOU** refers to the congregation deictically. However, in 2(c) **YOU** refers anaphorically to **JOSEPH**.

HE and its derived form **HIM** are the third person personal pronouns identified in the text under analysis. In KSL all the third person personal pronouns are signed deictically by pointing at the side of the signer. When one points on a side, it establishes a reference and thus that pointed side is used to refer to the pronoun consistently. **HE**, **HIM** and **IT** are signed as illustrated below:



HE/SHE/IT

Examples in sentences in the sermon:

3 a) **HE** SOLDIER BOSS ACCEPT

The soldiers' boss accepted and they
FINISH/TOGETHER WENT NAILS
together went and removed the nails and
NAILS OUT/ BODY OUT LAY ON
lay the body on the ground.
GROUND//

b) NOW GOD GIVE LIFE AGAIN MUST

We must believe that God has given us life
BELIEVE GOD CAN/WHY JESUS BODY
again. He can. Why do we have
HAVE THERE/WE BELIEVE
Jesus' body on the cross. We
NO/ MUST TRUST **HIM**//
Don't believe we must trust him

In 3 (a) above, **HE** is used cataphorically to refer anticipatorily to **THE SOLDIERS' BOSS**. Used this way, it has cataphoric reference, in which the referent has been withheld in order to engage the reader's /the listener's attention. **HIM** in 3 (b) on the other hand anaphorically refers to **GOD**. Thus, the third person pronouns can be used to refer both cataphorically and anaphorically. In the anaphoric reference 3 (b) above, **HIM** is used to keep current the identity of the conceptual content that was made plain in advance that is **GOD**. In 3(a) **HE** as a proform is used anticipatorily before the co-referring expression that is, **THE SOLDIERS' BOSS**. In the examples above the pronouns co-refer to elements of the same type. They refer to nouns. Such correspondence has the advantage of making already paired grammatical frameworks re-usable.

Other proforms that indicate personal reference are the reflexive pronouns. In this text only two were identified. Those identified in the sermon include:

2nd person singular – YOURSELF

3rd person singular – HIMSELF

They appear in sentences below.

4 a) GROW YEAR YEAR TWELVE/

He grew to be twelve years.

JESUS **HIMSELF**

Jesus himself was Twelve years.

YEARYEAR TWELVE/AFTER

Afterwards, he held discussions in the

HAVE CHURCH DISCUSS QUESTION

Church and answered

QUESTION QUESTION//

many questions.

b) START WORKWORK/PREACH

He started work and continued preaching in

DIFFERENT DIFFERENT DIFFERENT

Different places. Jesus himself suffered

DIFFERENT DIFFERENT CONTINUE

He experienced suffering.

CONTINUE. CONTINUE/HAVE SUFFER

He himself experienced suffering.

JESUS **HIMSELF**/HAVE EXPERIENCE

Jesus himself experienced a lot of

FINISH THERE/ JESUS **HIMSELF** HAVE

suffering.

c) WE THINK WHAT ABOUT JESUS

What do we think about Jesus being alive

ALIVE AGAIN? YOU MUST BELIEVE

again. You must believe in Jesus

BASI **YOURSELF** JESUS **YOURSELF**/

yourself that's all. Yourself in Jesus

GOD **HIMSELF** RISE JESUS DEAD

You yourself must believe God himself rose

Jesus from the

FINISH//

Dead that's all.

HIMSELF the third person reference pronoun is used to refer to **JESUS** anaphorically in 4 (a and b). **YOURSELF** the second person reference pronoun as used in 4 c) on the other hand used to refer to **YOU**, which in turn refers to the audience. **HIMSELF** is used as an emphatic pronoun thus it appears together with the nominal it emphasizes that is in 4 (a) and (b) **JESUS HIMSELF**. **YOURSELF** also refers retrospectively to **YOU** in the sentence but they are not used together.

The sermon does not make use of the first person singular reflexive pronoun **MYSELF**. This may be due to the fact that the preacher does not need to refer to himself since the sermon is centered around **JESUS** and thus the use of **HIMSELF** mostly referring to **JESUS** and **YOURSELF** mostly referring his congregation.

Possessive pronouns are also used to indicate personal reference. Possessive pronouns appearing in our text include:

HIS – the third person singular masculine possessive pronoun

MY – the first person singular dependent possessive pronoun

Their uses in the sermon can be exemplified as follows:

5 a) ARMY GROUP BEAT JESUS/SAME

Soldiers beat up Jesus. They also

GROUP PIERCE STOMACH **HIS**

pierced his stomach with spears.

USE SPEAR//

b) WE REMEMBER THAT JOKE BIG

We will remember that it is a big joke.

/JESUS AROSE BIG JOKE/**HIS**

That Jesus arose from the dead is a big joke

FOLLOWERS WHISPER COME PICK. His followers came secretly

BODY JESUS/FOLLOWERS THESE

And pieced his body and they

TELL TELL JESUS

whispered telling people

DAYDAY THREE UP AGAIN JOKE

That Jesus arose again on the third day

BIG//

c) YOU AFRAID NO!NO!/ME ASK

Don't be afraid. I am asking you to tell my

YOU TELL **MY** FOLLOWERS GO

followers to go to Galilee

GALILEE ME THERE//

I will be there

The third person masculine possessive pronoun **HIS** is used in 5 (a) anaphorically to refer to **STOMACH** and cataphorically in 5 (b) to refer to **FOLLOWERS**. **MY** in 5 (c) on the other hand refers cataphorically to **FOLLOWERS**. In 5a), the possessive pronoun **HIS** appears after the noun while in 5b) it appears before the noun. It appears therefore that KSL places possessive pronouns either before or after the noun.

Interrogative pronouns were also used in this text. Those used in the sermon can be classified as interrogatives that are used to introduce questions and interrogative adverbs used to form questions. Interrogative adverbs used to introduce questions, represent a piece of missing information that the speaker wants the hearer to supply. This is exemplified by **WHAT** and **HOW**. **WHAT** is also used as an exclamative to add intensity to a question.

There are also interrogative adverbs – used to form questions. In this text **HOW**, **WHY** and **WHO**. Their uses are exemplified below:

6 a) MARY TOGETHER SISTER

Mary together with her sister came to see

COME WOULD LIKE TO SEE JESUS/

Jesus body. They were shocked. What

SHOCK SEE HOLE INSIDE **WHAT**?

did they see in the grave?

FINISH//

b) HAPPEN JESUS CAUGHT/ HAPPEN

It happened that Jesus was caught.

WHAT?

What happened?

c) CARRY BODY JESUS GRAVE

they carried Jesus body to the grave

PEOPLE RETURN STONE GO/ IN

and put the stone Back and went.

THERE **WHAT?** HAPPEN

What happened inside there?

JESUS AROSE

It happened Jesus arose.

d) ISRAEL PEOPLE PATIENT

The Israelites were patient with God.

GOD/WAIT YEAR YEAR FOUR **WHY?**

They waited For four years why?

CHRIST BORN/CHRIST BORN MOTHER

Christ was born. Christ was born to

MARY//

Mary.

e) JESUS GROUP QUESTION QUESTION

The Jews questioned Jesus on different

QUESTION DIFFERENT DIFFERENT

On the cross finally why?

CAUGHT JESUS HANG HIM ON

Because God had decided to

CROSS/JESUS FINAL FINAL **WHY?**

Give Jesus as a sacrifice that's all.

GOD DECIDED GIVE DIED FINISH/

Jesus died along time ago.

JESUS DIED ALSO AGO//

f) BEFORE JESUS DEAD FINISH/

When Jesus had die, the guards were

GUARD INCLUDE THERE/SEE DEAD

Witnesses. They saw he had died but

FINISH BUT PIERCE WITH SPEAR

still pierced him with a spear.

HOW?DEAD FINISH AGO THERE

After he was already dead they

PIERCE PIERCE//.

still pierced his body.

g) IF DEAD ARISE ZERO MEANING

If you die and don't resurrect that means you

GOD BELONG ACCEPT ZERO/

don't belong to God. God will not accept

THROUGH **WHO?** THROUGH **WHO?**

you. Unless you go through Jesus
 JESUS PERSON BASI//
 through Jesus.

WHAT in 6(a) and (b) is used as an exclamative pronoun. In this way it has an intensifying force. **WHAT** used as an exclamative in KSL appears at the end of the statement.

In 6 (a) **WHAT** precedes another intensifier **FINISH**. **WHAT** is thus a pre-intensifier. In this role of an intensifier, **WHAT** refers back to what Mary and her sister, expected and what they saw which was contrary to expectation. In this case, **WHAT** intensifies this fact.

In 6 (b) **WHAT**, intensifies retrospectively the act of Jesus being caught. **HAPPEN WHAT** intensified the unjust nature of his being caught and what happened to him consequently.

In 6 c), **WHAT** plays another role. It functions as an interrogative adverb. As an interrogative adverb, **WHAT** is used to ask a question. In this case a rhetorical question. Rhetorical questions provide connections of what the speaker is saying. These types of questions do not require answers since the speaker supplies the answer immediately after. In Kenyan Sign Language rhetorical questions can be distinguished from real questions in the difference of their use of non-manual grammatical features that include: squinted eyebrows and tilted head (for real questions) and raised eye brows and a light shake or tilt of head (for rhetorical questions).

WHY and **WHO** are also used as interrogatives for rhetorical effect. In 6 (d) and (e), **WHY** appears utterance final followed immediately by the answer to the question asked by the speaker. The same is true with the sign **WHO** in 6 (g). In these instances, the interrogative adverb is used to refer anticipatorily or cataphorically. In 6 (g) **WHO** is used to refer cataphorically to **JESUS**. However, **HOW** in 6 (f) is purely used as an interrogative pronoun – it represents a piece of missing information that the speaker wants the hearer to supply. In this case **HOW** is questioning retrospectively the fact that the guards speared the body of Jesus even after they confirmed he was dead. The speaker does not supply the answer but lets his listeners fill in for themselves.

In the sermon, **WHAT** is used as an exclamative pronoun and as well as an intensifier and also for interrogative purpose used to ask rhetorical questions the same way **WHO**, **WHY** and **HOW** are used in the sermon. As an exclamative pronoun it appears at the end of a statement while as an intensifier it precedes another intensifier.

For any discourse to be understood by a reader or a listener, necessary connectors need to be used so as to achieve cohesive discourse as part of grammatical cohesion. From the above discussion, it is clear that reference cohesion as discussed through the use of personal pronouns, helps to clarify clausal relations. Pronouns bring cohesion in a text by continuing topics already raised since they have to be anchored to some entity in the text which all participants can orient to. The relationship between reference elements is such that a semantic relationship is established between them in which either the antecedent or the precedent provides the other with meaning. Thus reference denotes recurring expressions that designate the same entity in a text. They correlate lexical recurrence with conceptual recurrence. Beaugrande and Dressler (1981). Reference elements in a text establish a semantic relationship between them in which one of the elements provides the other with meaning. As far as the personal pronouns that refer to the speaker are concerned, **I** in KSL can appear utterance initial as the subject of the verb in KSL. **US** the plural of **I** appears sentence medial

while its derived form **WE** appears sentence initial in all instances the pronouns are used to refer to the person who is talking and link him or her to the events in the sentence.

For the Personal reference that are used to refer to the addressee, **YOU** in KSL is used deictically to point at the addressee, but it can also be used to refer anaphorically. These two uses enhance cohesion in the text. Similarly, **HE** and its derived form **HIM** are also signed deictically by pointing at the side of the signer. When one points on a side, it establishes a reference and thus that pointed side is used to refer to the pronoun consistently. **He** and **HIM** can be used both cataphorically and anaphorically. Used as anaphoric reference, these pronouns keep current the identity of the conceptual content that was made plain in advance. They can also be used anticipatorily (cataphorically) before the co-referring expression. These pronouns co-refer to elements of the same type. They refer to nouns. Such correspondence has the advantage of making already paired grammatical frameworks re-usable as pointed out earlier.

Other pro-forms that indicate personal reference that were analyzed above are the reflexive and possessive pronouns. In the sermon, **HIMSELF** and **YOURSELF** were used. **HIMSELF** in KSL formal discourse can be used anaphorically and as an emphatic pronoun. Used as an emphatic pronoun it appears together with the nominal it emphasizes. **YOURSELF** can also refer retrospectively in the sentence to **YOU** but they are not necessarily used together.

Possessive pronouns identified in our sermon are **HIS** and **MY**. **HIS** can refer both cataphorically and anaphorically while **MY** refers cataphorically. It appears that KSL places possessive adjectives either before or after the noun though there is some controversy as to whether KSL places possessive adjectives before nouns. Interrogative pronouns were also used in this text. Interrogative pronouns represent a piece of missing information that the speaker wants the hearer to supply. This is exemplified by **WHAT** and **HOW** from the sermon. Interrogative adverbs – used to form questions such as **HOW**, **WHY** and **WHO** were also identified. **WHAT** in KSL, can act as an intensifier or pre-intensifier in planned discourse. In the role of an intensifier, **WHAT** precedes another intensifier **FINISH** and also refers back or intensifies retrospectively. **WHAT** is also used as an exclamative pronoun. In this way it has an intensifying force. **WHAT** used as an exclamative in KSL appears at the end of the sentence.

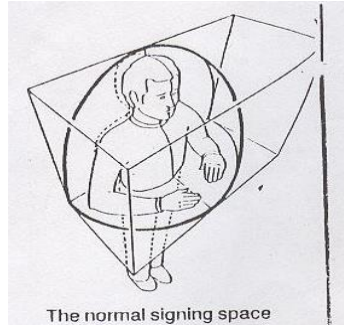
ii) Demonstrative Reference

Demonstrative reference is normally achieved through pronouns or determiners, which refers to something in terms of whether it is near or distant from the speaker. Demonstrative reference helps in achieving cohesion in a text through referring by means of location on a scale of proximity. Like all forms of referencing, demonstrative references provide us with referencing cohesion whose main function is to retrieve presupposed information in text and this information must be identifiable for it to be considered cohesive.

Demonstrative reference is made up mainly of pointing signs. “Signers establish reference in particular locations in the signing space and use pointing signs as pronouns to reference to these locations.” Zimmer and Patsake in Valli and Lucas (1995). Pointing signs are used as pronouns and the pronominalization process in KSL involves the indexing of a particular area in the signing space so as to establish referents that can concretely or physically be present or they may not be actually present in the signing space. The signing space can be illustrated as follows: Cf. Wool and Lawson (see figure below).

Demonstrative signs can function both as determiners and as pronouns. They represent two types of contrasts:

- Contrast in number
- Contrast in proximity



The contrast in proximity may be in space or in time. In the sermon, under discussion, the following demonstratives were used:

NEAR FAR
THIS (singular) -
THESE (plural)

Pointing or deictic signs constitute several lexical items (in the sermon only **THIS** and **THESE** were used) and these lexical items may have several functions. Examples:

7 a) **THIS** SOLDIER ORDER GO ASK

The soldier ordered him to go
 SOLDIER BOSS//
 and ask his boss.

b) TODAY JESUS ALIVE/ONE TIME

Jesus is alive today.
 AGAIN BACK WHY?
 One day he will come back why?
THISSON GOD//
 Because he is a Son of God.

c) BUT PERSON **THIS** ALIVE AGAIN//

But Jesus is alive again.

d) FOLLOWERS **THESE** TELL TELL

His followers were saying after three days
 JESUS DAYDAY THREE/
 Jesus arose from the dead.
 UP AGAIN JOKE BIG YES//

This is a big joke

THIS as exemplified in the sentences above is used to refer cataphorically to **SOLDIER** in 7 (a). **THIS** as a demonstrative brings out contrast in proximity in term of nearness in space. The signer will already have indexed a particular area on the signing space and designated it for the **SOLDIER** and then uses pointing signs to refer to **SOLDIER**. **THIS** therefore acts as a pronoun when the signer points at the already located place; he is referring to the **SOLDIER**.

THIS in 7 (b) has anaphoric reference since its antecedent precedes it. **THIS** refers to **JESUS** retrospectively. In 7 (c) **THIS** also has retrospective function since it refers back to **PERSON** in this case **JESUS**.

THESE, is also used in the text as exemplified in 7 (d). **THESE** used here, is also anaphoric since it is co-indexed to **FOLLOWERS** which comes before it.

THIS in 7 (b) and (c) and **THESE** 7 (d) indicate that there is some information that we need to retrieve from somewhere else anaphorically since it makes reference to prior discourse. Its cohesiveness stems from “the continuity of reference whereby the same thing re-enters into a discourse a second time. Halliday and Hasan (1976).

THIS in 7 (a) on the other hand, expresses a cataphoric relationship between the reference itself and its precedent. Thus the linkage between them is to a subsequent thing. In cataphoric relations, the addressee looks forward or the reference item refers to what comes afterwards. In this case **THIS** refers to **SOLDIER**.

The sermon uses singular demonstrative pronouns that refer to objects of people near the speaker in plural or singular these are proximal demonstratives such as: **THIS** and **THESE** which link them to subsequent things or makes reference to prior discourse.

iii) Use of Pronouns (Cross Reference or Substitution) and Ellipsis

Leech and Svartvik (1975) assert that clauses are often connected not only because of a meaning-link but also because they share some content e.g., they may be talking about the same person. In this case there is bound to be repetition. Repeating of shared words and content can be avoided by:

- Cross-reference (using pro-nouns)
- Omitting the repeat elements

These two ways of avoiding repeating words and content outlined above give us two ways of establishing grammatical cohesion in discourse – substitution and ellipsis.

While substitution involves the replacement of one element with another in a text, Ellipsis on the other hand “occurs when the standard of one sentence is incomplete and the missing element(s) can be recovered from a previous sentence unambiguously.” Hoey (1983). McCarthy (1998), views ellipsis as “omission of elements normally required by the grammar which the speaker/writer assumes are obvious from the content and thus need not be raised.” Ellipsis and substitution are however interconnected. Renkema (1993) says, “Ellipsis – the omission of a word or part of a sentence is closely related to substitution. Ellipsis is substitution by zero.” Examples of both Ellipsis and Substitution noted in the sermon include:

8 a) OTHER PERSON NAME JOSEPH
Another person named Joseph his

SIGN RICH/ COME ASK SOLDIER
 sign is rich came and asked the soldiers
 PLEASE GIVE JESUS BODY ME/
 To give him the body of Jesus.
 THIS SOLDIER ORDER YOU GO ASK
 The soldier told him to go and ask
 OTHER SOLDIER BOSS/
 Their boss. When he asked the boss the boss
HE SOLDIER BOSS ACCEPT FINISH//
 accepted.

b) TELL TELL DAYDAY THREE UP
 You must say that it is a big joke that Jesus
 BIG JOKE/FOLLOWER TRYTRY
 arose on the third day.
 STEAL BODY JESUS/FOLLOWER
 His followers tried to steal the body of Jesus
 TELL TELL PEOPLE DAYDAY THREE
 and are telling people that Jesus arose from
 UP DEAD//
 the dead on the third day.

c) ANGLE TELL YOU SHOUT NO! NO!
 The angle said do not shout. I know you are
 NO!/I KNOW YOU LOOK JESUS
 looking for Jesus but
 BUT NOW JESUS THERE NO NO/
 He is not here.
 ALIVE AGAIN
 He is alive again.

d) GIRL HAPPY HAPPY HAPPY/ MIND
 The girls were happy and they were ready to
 READY SEE JESUS/
 see Jesus. Mary and her sister also
 MARY TOGETHER SISTER SAME RUN!
 Ran to go and tell Jesus' followers that
 RUN! RUN! GO TELL FOLLOWERS
 JESUS WAIT THERE//
 Jesus was waiting for them.

e) TODAY JESUS ALIVE AGAIN/BACK
 Today Jesus is alive again.
 WHY? THIS SON OF GOD//
 Why did he come back? Because he is son of God.

f) TODAY GOD ARISE YOU DEAD

Today God has arisen you from the dead.

/ALIVE AGAIN/ARISE

You are alive again he arose from the dead.

DEAD THERE/PERSON CROSS DEAD

He had died on the cross.

FINISH//

Example 8 (a) there is omission of part of the sentence **HE SOLDIER BOSS ACCEPT FINISH**. The part omitted here is that he accepted to give Jesus' body to **JOSEPH**. This information is expressed implicitly not explicitly. Similarly, in 10 (b), there is information which the speaker does not state explicitly but which can be recovered from previous sentences. **FOLLOWER TELL TELL PEOPLE DAYDAY THREE UP DEAD**. Here, the word Jesus is omitted. That Jesus was resurrected after three days. In 8 (c) the word **JESUS** is also omitted in **ALIVE AGAIN**.

In the above examples, the speaker avoids repeating shared words and content through the use of ellipsis or omission. In 8 (a), the ellipsis is of a whole part of a sentence. In 10(b) there is a nominal ellipsis where the noun **JESUS** is left out. In 8 (c) also nominal ellipsis is evident with the nominal **JESUS** being left out. In all these instances, there is sharing of structural components at the surface structure and some of these shared structural components are omitted since the speaker assumes they are obvious from the context. Thus the text processing involving ellipsis is only possible when it involves "a perceptible discontinuity of the surface structure" Beaugrande and Dressler (1981).

Grammatical cohesion through cross-reference (substitution) is exemplified in 8 (d-f). In 8 (d); the lexical item **THERE** is a substitute for Galilee, where Jesus was meant to meet his followers after resurrection. In 8(e), **THIS** substitutes for **JESUS** anaphorically while in 8 (f), **PERSON** is also a substitute for **JESUS**. In 8 (d) and (e) nouns are replaced by a demonstrative adverb and demonstrative pronoun respectively. While in 8 (f) one-noun replaces another **JESUS PERSON**. The proforms used in 8 (d) and (e) **THERE** and **THIS** and the noun **PERSON** is 8 (f) function to carry forward content from previous noun phrases in a text. Texts can be held together by the mechanism of substitution one expression used in the place of another one of the same sense or reference and thus forming a cohesive relationship. Thus the pro- forms do signal the fact that the content is kept alive. The content must first be clearly specified before being re-used later on and thus signal shared knowledge. It is important to note that it is the fundamental relation between the text that forces the reader when he encounters substitution or ellipsis, back into the text to look for a previous expression to substitute, in case of substitution or to provide in case to ellipsis.

As cohesive devices both substitution and ellipsis contribute to compactness and efficiency in discourse. Their usefulness stems from the fact that they make messages shorter to discern and that they make the structure of the sentence tighter.

iv) Comparative Reference

Comparative reference denotes a comparison of two or more things, events, abstractions in terms of some particular in respect of which they are similar or different. Comparative reference signs identified in the text include:

SAME a signaler of similarity and **BUT** a signaler of contrastive information. **Examples:**

9 a) **SAME** JESUS ALIVE AGAIN

Similarly, Jesus is alive again.

FINISH

That's all.

b) GO FAST GO FAST TELL

Go very fast and tell his followers

FOLLOWERS WILL SEE JESUS/GIRL

that they will See Jesus.

HAPPY HAPPY HAPPY MIND READY

Mary and her sister were very happy and

SEE JESUS/MARY TOGETHER SISTER

they prepared themselves psychologically to

SAMERUNRUN GO TELL

see Jesus. They ran to go and

FOLLOWERS JESUS WAITED THERE

tell his followers to wait for Jesus.

c) BIBLE TELL IF PEOPLE DEAD ARISE

The Bible says if the dead were not

ZERO SAME PEOPLE THERE

resurrected, then there would have

ARISE NOTHING

been no resurrection.

d) **SAME** GOD ARISE DEAD

Similarly, if God did not arise,

ZERO/SAME PEOPLE

people from the dead, then

ARISE ZERO

People would not have arisen

SAME in KSL can appear in the sentence initial position, and medial position. In 9 (a) and (d), **SAME** appears in the sentence initial position making it refer cataphorically. In 9 (a), it is co-referenced to **JESUS** which comes after it and in 9 (d) on the other hand, it is co-referenced to **GOD** which also appears after it. **SAME** therefore in the two examples is used to denote that a certain NP is referentially equivalent to a subsequent one. **SAME** is in this case referentially equivalent to **JESUS** and **GOD** in 9 (a) and (d) respectively which appear after it in the sentences above. In this pre- focused part position **SAME** is used for emphatic purposes. It thus puts emphasis on the NP it is co- referenced to.

In 9 (b) and (c) **SAME** appears in a post focus position. In 9 (b), the focused part is **MARY TOGETHER SISTER**. This is the noun phrase that **SAME** is co-referenced to. In 9 (c) **SAME** is co-referenced retrospectively to **PEOPLE DEAD**. In this position **SAME** serves an additive function and its equivalent to 'similarly' or "at that time". In 9 (b) **MARY TOGETHER SISTER** is co-referenced to **SAME** which is equivalent to "at that time" in 9 (c) **SAME** which is co-referenced to **PEOPLE DEAD** is equivalent to 'similarly'.

BUT on the other hand signals comparative reference. It is used to signal contrastive elements in a sentence as the examples below show:

10 a) I KNOW YOU LOOK JESUS **BUT**

I know you are looking for Jesus but

NOW JESUS

Jesus is not here

THERE NO! NO! ALIVE AGAIN//

right now. He is alive again.

b) SAME WAY JESUS CHRIST

Though you can belong to Jesus, there are

BELONG CAN **BUT** IMPORTANT TWO

two important things,

ONE GOD RISE JESUS FROM DEAD/

one God resurrected Jesus from the dead.

SECOND GOD SAVE LIFE FOR YOU

Two God saved your lives

LIVE AGAIN

for you to live again.

c) SOME PEOPLE DEAD DEAD FINISH

Some people died along time but God

BUT GOD

ARISE DEAD//

resurrected them.

In 10 (a) and (b) **BUT** is used to indicate the non-satisfaction of possible or probable or necessary conditions. This is the condition-unsatisfied **BUT** which is semantically equivalent to “yet” and “however.” In 10 (a) the speaker is drawing his hearers attention to the fact that they are looking for Jesus in his grave yet he is alive again. The condition that is unsatisfied expressed by **BUT** is their expectation to find Jesus. In 10 (b) also one can belong to Jesus if they are aware of the two issues enumerated by the speaker. In 10 (c) on the other hand, **BUT** is used as an adversative – to show differences between two events. The antecedent of these events **SOME PEOPLE DEAD DEAD FINISH** expresses sufficient condition for negation of the subsequent. Thus despite their death God resurrected them – **BUT GOD ARISE DEAD**.

BUT can also be used to indicate unexpected events. This function of **BUT** is manifested in 10 (a) and (c). In 10 (a) the people looking for Jesus expected to find him in his tomb **BUT** that was not to be. In 10 (c) also people died **BUT** God has the power to resurrect them.

Comparative reference in the sermon is signaled by **SAME** and **BUT**. **SAME** signals similarity while **BUT** signals contrast. **SAME** also is used to signal an additive function that is equivalent to “similarly” or “at that time.” **BUT** as used serve to signal contrastive reference.

From the foregoing discussion on reference cohesion, following Hammed we can argue that cohesion can be established through personal reference since it keeps track of function

through the speech situation using noun pronouns like “he, him, she, her”, etc. and possessive determiners like “mine, yours, his, hers”, etc. Demonstrative reference on the other hand, keeps track of information through location using proximity references like “this, these, that, those, here, there, then, and the”. Comparative reference keeps track of identity and similarity through indirect references using adjectives like “same, equal, similar, different, else, better, more”, etc. and adverbs like “so, such, similarly, otherwise, so, more”, etc.

v) Discourse Markers and Conjunctions

Grammatical cohesion can also be created and achieved through discourse markers and conjunctions. Discourse markers can be viewed as linguistic elements used by speaker or writer to ease the interpretation of text, mostly signaling a relationship between segments of discourses.

Grammatical cohesion uses grammatical patterns to signal the development of discourse. These patterns also known as discourse markers in some way indicate the speakers’ attitude towards the direction of discourse. Conjunctions which Beaugrande and Dressler (1981) have called Junction “is a device for signaling relationships among events or situations – the use of junctive expressions called conjunctions in traditional grammar.” Conjunctions involve the use of formal markers that relate sentences, clauses and paragraphs to each other. Conjunctions signals the way the writer wants the reader to relate what is about to be said to what has been said before.

Trujillo (2003) came up with a list of discourse markers with the range of possible relationships for Spanish and English which we shall use and adopt (with minor changes) by indicating only those discourse markers identified in text under discussion.

Discourse Markers and Examples in Sermon

I. Appositive	
Dismissive	FINISH, ZERO, NOTHING, NO
II. Additive	TOGETHER, AGAIN, SAME
Adversative	BUT
Listing	FIRST, SECOND etc.
III. Temporal	BEFORE
Comparative	AFTER
Consecutive conditional	IF

Beaugrande and Dressler (1981) identify devices that signal relations among events and situation as junctive devices which include:

Conjunctions	Link things which have same status e.g., and
Disjunction	Link things which have alternative status e.g., or, whether or not
Contra-junction	Link things, which have the same status but appear incongruous or incompatible in the textual world, e.g., but, yet etc.
Subordination	Link things which the status of one depends on that of another, e.g., because etc.

Examples of discourse markers and junctive expressions used in our text are given below:

b) Appositive – Dismissive Discourse Markers

When two words, phrases or clauses in a sentence have the same reference, they are said to be in apposition. **Examples:**

11 a) WHY GOD DECIDE GIVE DEAD

Why did God decide to offer Jesus to

FINISH//JESUS DIE **AGO**//

die along time ago?

b) GOD HIMSELF RISE JESUS DEAD

God himself arose Jesus from the dead.

FINISH//

c) ALIVE AGAIN **FINISH**//

Jesus is alive again.

In 11 (a), **AGO** and **FINISH** are in apposition since they occur together with nouns that refer to the same person or thing. In 11 (a), **FINISH** refers to the fact that **JESUS** had died. **AGO** also refers to the same thing death of Jesus. In 11 (b), **FINISH** is in apposition with the phrase **RISE JESUS DEAD**. In 11 (c), **FINISH** refers to **ALIVE AGAIN** it occurs with **JESUS** which is phonetically null but the context provides for its interpretation. **FINISH** in KSL is signed as illustrated below:



FINISH

According to Akach (1991), **FINISH** is an auxiliary verb in KSL that indicates that an action has been accomplished. Valli and Lucas (1995) also hold the same view when they say that **FINISH** is a completive marker which is used to show that the event being described is completely finished. Apart from the above function identified as performed by **FINISH**, Valli and Lucas also indicate that “**FINISH** has the meaning of “in the past.” It is also used for emphasis. In 11 a), it is used to emphasize the importance of **GOD** offering Jesus as a sacrifice. In 11 (b), it emphasizes God’s power in raising people from the dead. This emphasis of **FINISH** is supplemented by the reference pronoun **HIMSELF**. In 11 (c), the emphasis is

on the fact that **JESUS** is alive again. The appositive **FINISH** as a completive marker is used in the above examples to indicate that the action of the sentences represented by the verbs is completely finished. In 11(a), the “decision,” in (b) “raising” Jesus from the dead and in (c) the fact that Jesus is “alive” – all the action represented by these verbs are completely finished.

The emphatic nature of **FINISH** comes out due to its dismissive force. Thus **FINISH** also functions as a dismissive appositive. That the action is not only finished completely but also the addressee is not allowed any further hearing or consideration of the subject or claim.

Other dismissive apposition markers identified in our text include;

NOTHING, **ZERO**, and **NO**. **NOTHING** and **ZERO** in KSL are signed as illustrated below:



NOTHING



ZERO

Examples:

12 a) SAME GOD ARISE DEAD **ZERO**//
Similarly GOD would not have arisen the dead.

b) BIBLE TELL IF PEOPLE DEAD ARISE
The Bible says that if dead people were not
ZERO/ SAME PEOPLE THERE
arisen, similarly there would be
NOTHING//
no people

c) GOD ARISE JESUS LORD **ZERO**/ALL

If God had not arisen Jesus then all people

PEOPLE ARISE **ZERO**//

would not have been arisen.

d) IF GOD PEOPLE DEAD **ZERO**/ GOD

If people didn't die, God will not have

ALIVE ARISE **NO**/JESUS CHRIST

arisen then Jesus would not

DEAD ARISE **NO**//

have arisen.

e) TELL YOU AFRAID **NO**//

Don't be afraid.

NOTHING and **ZERO** are dismissive markers or negation markers in KSL, when used they do not provide the listener with any chance of further hearing or consideration of the subject. These negation markers normally appear in utterance final position. The three can substitute each other freely without changing the negative meaning of the utterances.

For example 12 (a) above repeated here as

13 a) SAME GOD ARISE DEAD **ZERO**

b) SAME GOD ARISE DEAD **NOTHING**/**NO**

Both sentences would translate as: "similarly God would not have arisen the dead." Using the substitution test, we can also show that while **FINISH** indicates perfective action, **NOTHING**, **ZERO** and **NO** can replace it in utterances to negate the sentences where action was completely finished. Akach (1991)

For example 11 above repeated here as 14:

14 a) ALIVE AGAIN **FINISH**

b) ALIVE AGAIN **ZERO**/**NOTHING**/**NO**

While in 14 (a) **FINISH** represents the perfective nature of the action, in (b) **ZERO**, **NOTHING** and **NO** negates the action to mean "Jesus is not alive again."

c) Additive Discourse Markers

Additive discourse markers identified in the text include: **TOGETHER**, **AGAIN** and **SAME**.

15 a) ANYTIME HAPPEN JESUS

Jesus will come anytime. What is our

COME/WE GOAL DO WHAT/ LIFE

goal. It is important that Jesus

AGAIN IMPORTANT LIFE JESUS

is alive again.

IMPORTANT//

b) GOD KNOW PLAN KNOW PLAN

God has a plan already and Jesus is

READY FINISH/ JESUS LIFE**AGAIN**

Alive again and he is not the same again.

FINISH/ **AGAIN** FACE DAME ZERO//

c) I AM PERSON SOLDIER **AGAIN**

I am acting as a soldier and also as Jesus”

JESUS’ FOLLOWER//

follower.

d) JESUS ALIVE TOGETHER GOD/

Jesus is alive and is with God. The new

PERSON NEW ALIVE **TOGETHER**

Jesus is alive with God.

GOD//

e) SISTER **TOGETHER** BOTH ENTER

Both sisters entered the tomb and saw

SEE BODY NOTHING

nothing.

SAME WAY JESUS CHRIST BELONG

Similarly we can belong to Jesus

CAN/JESUS. BELONG **SAME** TODAY

We can belong to Jesus since

ALIVE **AGAIN** FINISH

he is alive today

AGAIN is used as an additive adjunct in 15 (a – c). In 15 (a) **AGAIN** is used to denote something that has happened once more that is Jesus is alive again (once more). The same is true of the first **AGAIN** in 15 (b). the second **AGAIN** in 15 (b) on the other hand indicates more of “in addition to that,” in addition to the fact that he is alive again, Jesus is not the same. In 15(c) **AGAIN** is used as an equivalent of the English “also” or “both.” **AGAIN** in 15 (a) and the first **AGAIN** in 15 (b) are also used as time-when adverbs to indicate time relations. **AGAIN** used this way i.e., equivalent to “at this very moment.” We can use the substitution test to verify this claim. For example 15 (a) and (b) repeated here as 16 a) and (b) respectively

16 a) ANYTIME HAPPEN JESUS

Jesus will come any time. What is our goal?

COME/WE GOAL DO WHAT/LIFE **AT**

He is alive at this moment his life is

THIS MOMENT IMPORTANT LIFE

important.

JESUS IMPORTANT//

b) GOD KNOW PLAN KNOW PLAN

God already has a plan and at this

READY FINISH/JESUS LIFE AT THIS

moment” Jesus is alive and he is not the

MOMENT FINISH/AGAIN FACE SAME

same

ZERO

When **AGAIN** is used as a modifier in KSL, it is used to mean both “once more” and “at this very moment” e.g., in 15 (a) and in (b) the second **AGAIN**. When used as a pre-modifier e.g., 15(b) (second again), it means “additionally” or in “addition to that”

TOGETHER in 15 (d) and (e), is used to denote “together with.” That is Jesus is alive and he is together with God. Similarly, **TOGETHER** can be used to mean “on the same side of.” This usage is normally in times of conflict or competition Leech and Svartvik (1975). In this case if the competition is between the devil and God, then Jesus is “on the same side of” God. **TOGETHER** is linked to God cataphorically since it refers to God which is used subsequent to it.

SAME 15 (f), on the other hand appears before the focused part. This way it serves an additive function since its use is equivalent to “similarly.” The use of same pre focused part also serves emphatic purposes. **SAME** in KSL is signed as illustrated below:

**SAME****d) Adversative Markers**

Another additive discourse marker which mainly shows adversative relations is **BUT**. Examples:

17 a) SOME PEOPLE DEAD FINISH

Some people were dead but God arose them

BUT GOD ARISE DEAD//

from the dead.

b) ALIVE AGAIN IMPORTANT **BUT**

It is important he is alive again but our goal
ALL GOAL JESUS BASI//
should be Jesus only.

PERSON CROSS DEAD FINISH **BUT**

Jesus on the cross but different Jew groups
JEW GROUP DIFFERENT DIFFERENT
Thought that was the end but Jesus Christ
DIFFERENT THINK THIS DEAD FINSH/
BUT JESUS CHRIST CHEAT DEATH//
cheated death.

BUT is used to signal contrasting information. It is used to bring together clauses by coordinating them. In 17(a) – (c) the first clause is linked to the second using a contrastive coordinator **BUT**. The use of **BUT** in the above examples mainly shows that “the first part of the sentence contains information that is not in concord with the positive evaluation of the second” Hoey. Used this way, **BUT** performs adversative functions to show contrast by comparison of two events in terms of some particular aspect of which they are different.

In 17 (a), the contrast comes out in terms of dead and alive – people died **BUT** God resurrected them. In 17 (b) the fact that Jesus is alive again is important however most important is to have Jesus as one’s goal. 17 (c) the contrast comes out where despite Jesus being dead the Jews thought it was the end but Jesus cheated death.

BUT is also used to indicate events which are unexpected. The fact that God arose the dead in 17 (a) for example is unexpected as indicated by the use of **BUT**. This usage is also exemplified in 17 (c) where Jesus’ ability to cheat death was highly unexpected.

e) Consecutive Conditionals

Another way in which grammar provides for putting clauses together apart from coordination is subordination. In this text the subordinate conjunction **IF** is used as exemplified below:

18 a) **IF** GOD PEOPLE DEAD

If people didn’t die, God would not have
ZERO/GOD ALIVE ARISE
arisen them. Jesus Christ would
NO/JESUS CHRIST DEAD ARISE NO//
not have been arisen.

b) BIBLE TELL **IF** PEOPLE DEAD

The Bible tells that if dead people didn’t
ARISE ZERO SAME PEOPLE THERE
arise, there
ARISE NOTHING//

c) **IF PEOPLE BELIEVE DEAD ARISE**

If people believe that the dead can be
ALIVE PERSON WILL LIVE AGAIN
 resurrected And he alive again then
CAN/ ALIVE PERSON WILL AGAIN
 they can live again
CAN/ALIVE AGAIN CAN//
 They can live again.

IF DEAD ARISE ZERO MEANING GOD

If the dead are not resurrected that means
BELONG ACCEPT ZERO//
 they don't belong to God.

Conditional clauses introduced by **IF** are related to reason clauses. Conditionals as lexical signalers express relations between facts. They indicate the consequences of something and they also articulate a condition upon which the topic being discussed depends. In other words, conditionals express a dependency relationship between facts or propositions.

In 18 (a) the dependency relationship comes out in the fact that dead people being arisen is conditional on their being dead in the first place. If they didn't die then they wouldn't have been arisen. Similarly Jesus wouldn't have been arisen if he hadn't died. In 18 (b), if the people in the Bible didn't die and arise, then people today would not be arisen too. In 18(c), if people believe that the dead can be arisen and be alive again they too can live. In 18 (d) if the dead did not arise, it meant God did not accept them.

IF as used in the above examples relates facts in the proposition by stating the contingent dependence of one circumstance to another. **IF** sometimes expresses an open condition. This is a condition where the truth of falsehood of what is described by the sentence is open or unknown. Similarly, **IF** can be used to expresses hypothetical conditions or an unreal condition. In 18 above, **IF** seems to be used solely to express open conditions since the truth or falsity of the idea expressed in these sentences are open or unknown.

f) Listing Additive Markers

Other additive discourse markers are those used to list what is being said. These additives consist of signs that indicate additions or continuation as exemplified below:

19. **GOD POWERFUL/LORD JESUS**

God is powerful. He arose Jesus from the
AROSE DEAD/FIRST GOD AROSE FOR
 dead. First God arose from the dead for us.
YOU FROM DEAD/SECOND GOD
 Second God also arose us from
AROSE US BURRY DEAD/ GOD
 the dead. He is powerful.
POWERFUL FINISH//

Listing signs exemplified above – **FIRST** and **SECOND** are chronological linkers. They indicate addition or continuation of ideas. They connect ideas in a series or a list. According to Crombie (1985) “the relation of chronological sequence provides the semantic link between event propositions one which follows the other in time.” In the above examples, **SECOND** follows **FIRST** in a chronological order. The signs **FIRST** and **SECOND** are made on the fingers; the fingers serve what Liddel (1996) calls articulatory function. He refers to the point on the body or in the signing space that serves this function (articulatory function) as the locus. The fingers, used as the locus to show the listing, serve the referentially equality function.

FIRST and **SECOND** above are examples or anticipatory signaling since listing comes before its lexical realization or what the signaling is referring to. In this case **FIRST** is referring to the fact that God rose from the dead for us. **SECOND** on the other hand refers to the fact that God also arose us from the dead.

g) Temporal Markers

Other signs that are used to specify time of the event being described in our text include: **NOW, TODAY, AGO AGO, AFTER, BEFORE.**

20 a) OTHER GROUP SOLDIER

The guards guarding the tomb fainted and
BEFORE FALL **NOW** UP AGAIN//
then they woke up again.

b) **NOW** GOD GIVE LIFE AGAIN MUST

Today God has given us life again. We
BELIEVE GOD CAN//
must believe God can do this.

c) **TODAY** GOD ARISE YOU DEAD

Today God has arisen from the dead and is
ALIVE AGAIN//
alive again.

d) **TODAY** THINK JESUS FINISH **AGO**

Today you may think Jesus died along time
AGO/JESUS BODY ALIVE AGAIN//
ago but he is alive again

e) **BEFORE** JESUS EXPERIENCE HAVE

Sometimes back Jesus had experienced
SUFFER SUFFER SUFFER WORK
suffering while doing his work.
WORK TIRED THERE//

f) **BEFORE** STORY MATTHEW

The story of Matthew gave us a different
DIFFERENT DIFFERENT WORD GIVE//
picture.

g) **GROW** YEAR YEAR TWELVE/ JESUS

He grew to be twelve. Jesus was twelve
HIMSELF YEAR YEAR TWELVE/
years old when he held discussion in
AFTER HAVE CHURCH DISCUSS/
churches and answered
QUESTION QUESTION QUESTION
different questions.
QUESTION HAVE//

h) **AGO** AGOSEE DEAD FINISH/ JESUS

You may think Jesus died along time
ALIVE AGAIN FINISH//
ago but he is still alive.

i) **WHY** GOD DECIDED GIVE DIED

Why did God sacrifice his own son/ Jesus
FINISH/ JESUS DIED **AGO**//
died for us along time ago.
NOW in KSL can serve two functions:

- As a marker of present time. In this use, it can be substituted with time reference “today” or at “this time” **NOW** in this instance is mainly used as a temporal marker.
- As a discourse marker indicating a “shift into a new topic or sub topic as well as calling attention to what is coming next in the text” Roy (1981). **NOW** thus introduces a new stage in the sequence of thought. Quirk and Greenbaum (2004).

When **NOW** for example is used as a marker of present time. It identifies a point or period of time directly. It thus acts as a “time-when” conjunction. **NOW** in 20 (a) is an example of the second use. It is used as discourse marker. It is used to introduce a new stage in sequence of thought or to begin a discussion. The discourse marker **NOW** can be distinguished from **NOW** the marker of present time by virtue of the fact that it mainly occurs sentence initial as is the case, in 20 (a). **NOW** is calling attention to what is coming next in the text. The fact that we must believe that God gives life again.

It should be noted also that in KSL the sentence initial **NOW** can also act as marker of present time apart from being a discourse marker. Thus when **NOW** appears sentence initial in KSL; it serves dual functions – as a discourse marker and the marker of present time.

Another “time when” adverb used in our text is **TODAY**. In Example 20c) and (d), **TODAY** is used to identify a point or period of time directly. In 20 c) and (d) **TODAY** means “at this point in time.” In 20c), it means that “at this point in time,” God has saved you from

sins and you are alive again. In 20(d), **TODAY** means “at this point in time,” you may think Jesus died a long time ago. However, he is alive again.

BEFORE as a discourse marker that indicates time relations is exemplified in 20 (e) and (f). **BEFORE** is used as a “time when” adverb that identifies time indirectly by reference to another point in time understood in the context. **BEFORE**, refers to past time but not too distant past. It refers to a very “short time ago” as compared to **AGO AGO OR AGO** in 29(h) and (i). These two signs **AGO AGO** and **AGO** – indicate a distant past – “a long time ago” together with **BEFORE** they are used for backward directionality.

AFTER, 20 (g), on the other hand, is a marker of future tense. It is used to express forward directionality in which the earlier event “when Jesus turned twelve years old” provides reason for the later event “his going to hold discussion and answering questions in church.”

Time in KSL can be indicated by the imaginary time line that has traditionally been seen to run perpendicular to the signer’s body. The area near the signer’s torso has a general meaning of “present” the area farther away has a meaning of “future,” the areas over the shoulder has a general meaning of “past” Valli and Lucas (1995).

From the above discussion, as Halliday and Hasan (1976) put it Conjunction acts as a semantic cohesive tie within text in four categories: additive, adversative, causal and temporal. Additive conjunctions act to structurally coordinate or link by adding to the presupposed item and are signaled through “and, also, too, furthermore, additionally,” etc. Additive conjunction may also act to negate the presupposed item and is signaled by “nor, and...not, either, neither”, etc. In the sermon under analysis the following KSL examples were identified: **TOGETHER**, **AGAIN AND SAME**. Adversative conjunctions act to indicate “contrary to expectation” (ibid: 250) and are signaled by “yet, though, only, but, in fact, rather,” etc.... temporal and links by signaling sequence or time. Some sample temporal conjunctive signals are “then, next, after that, next day, until then, at the same time, at this point,” etc. In the sermon under analysis the following KSL example was identified: **BUT**

CONCLUSION

From the above discussion, we have observed that texture in the sermon is achieved through grammatical cohesion which is achieved through grammar. The structuring of content in discourse through the use of structural devices or linguistic features that mark transition help in establishing cohesion. Discourse elements in a text are united by certain links and connections. These links and connections are what are referred to as cohesion devices. Grammatical cohesion the concern of this paper is concerned with matters such as reference, substitution, ellipsis, discourse markers and conjunctions.

Reference is concerned, with the relationship which holds between words and things since words refer to things. Brown and Yule (1983). Thus reference elements in a text establish a semantic relationship between them in which one of the elements provides the other with meaning. It is clear that reference cohesion by use of personal pronouns, helps to clarify clausal relations. Personal pronouns therefore link elements in a text by continuing topics already raised since they have to be anchored to some entity in the text which all participants can orient to. In this way it helps in bringing cohesion. The relationship between

reference elements is such that a semantic relationship is established between them in which either the antecedent or the precedent provides the other with meaning. In KSL, personal reference pronouns especially those that refer to the addressee can be used deictically to point at the addressee, and can also be used to refer anaphorically for example **HE** and **HIM**. When they are used for anaphoric reference, these pronouns keep current the identity of the conceptual content that was made plain in advance. When used anticipatorily (cataphorically), they appear before the co-referring expression and they co-refer to elements of the same type. In both uses above they enhancing cohesion in discourse. The reflexive pronouns **HIMSELF** and **YOURSELF** can be used anaphorically and also as emphatic pronoun. When use anaphorically they refer back to a nominal that had been mentioned earlier and they are thus linked to the same. On the other hand, the cohesiveness of interrogative pronouns such as **WHAT** and **HOW** stems from the fact that they represent a piece of missing information that the speaker wants the hearer to supply. Demonstrative reference helps in achieving cohesion in a text through referring by means of location on a scale of proximity. **THIS** and **THESE** for example indicate that there is some information that we need to retrieve from somewhere else anaphorically since it makes reference to prior discourse.

Use of pronouns (cross reference or substitution) and ellipsis (Omitting repeated elements) are two ways of avoiding repeating words and content and they are used to establish grammatical coherence in discourse. As cohesive devices both substitution and ellipsis contribute to compactness and efficiency in discourse since they make messages shorter to discern and that they make the structure of the sentence tighter. Cohesion can also be achieved through use of comparative reference which denotes a comparison of two or more things, events, abstractions in terms of some particular in respect of which they are similar or different. Examples in the sermon include: **BUT** and **SAME**. While **SAME** signals similarity, **BUT** signals contrast.

Grammatical cohesion can also be created and achieved through linguistic elements used by speaker/writer to ease the interpretation of text, frequently signaling a relationship between segments of discourse or discourse markers in the sermon, the following were identified: Appositive – dismissive discourse markers e.g., **FINISH**. Other dismissive apposition markers identified in our text include; **NOTHING**, **ZERO**, and **NO. NOTHING** and **ZERO**.

KSL makes use of additive discourse markers like **TOGETHER**, **AGAIN** and **SAME** to achieve cohesion. Similarly, **BUT** an additive discourse marker which mainly shows adversative relations is also used for the same. KSL also makes use of additive discourse markers that list what is being said e.g., **FIRST** and **SECOND**. Subordination is one of the ways used for putting clauses together. In the sermon the subordinate conjunction **IF** is used for this cohesive function.

Finally temporal markers used to specify time of the event being described in our text include: **NOW**, **TODAY**, **AGO** **AGO**, **AFTER**, **BEFORE**. These temporal adverbs are used to link event in discourse in terms of time.

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Chapter 12

METHOD AND MATERIALS FOR A COMPUTER-BASED TEST OF SIGN LANGUAGE ABILITY: THE AMERICAN SIGN LANGUAGE DISCRIMINATION TEST (ASL-DT)

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ABSTRACT

A novel computer-based adaptive test of ASL ability known as the American Sign Language Discrimination Test (ASL-DT) recently has been developed at the Rochester Institute of Technology's National Technical Institute for the Deaf (RIT/NTID). The ASL-DT is a measure of learners' sign recognition ability. Specifically, the test measures the ability to discriminate phonological and morphophonological contrasts (minimal pairs) in ASL. Both the item content and test administration methodology differ substantially from procedures currently used for the assessment of second language (L2) learners' sign language abilities. Using a paired comparison discrimination task and Rasch analysis to model item difficulty and person ability, the ASL-DT provides an objective, valid and reliable measure of ASL skills that can serve as a proxy measure of ASL proficiency (Bochner et al., 2016).

In this chapter, we report the results of a study designed to enlarge the ASL-DT item pool to expand the effectiveness of the test across the full range of L2 learners' ASL abilities. A set of 280 items was administered to a sample of 178 adults having ASL proficiency levels extending from beginners to native signers. Forty-eight of the items

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were used in previous research (Bochner, Christie, Hauser & Searls, 2011; Bochner et al., 2016), and 232 items were newly developed.

Goals of the study included providing additional evidence of the test's reliability and validity, as well as providing preliminary evidence of the effectiveness of the adaptive test. The chapter builds upon previous work indicating that evaluation of learners' ability to recognize linguistic contrasts can provide useful information about their acquisition of ASL (Bochner, Christie, Hauser & Searls, 2011) as well as previous work indicating that the ASL-DT may provide a useful complement to measures such as the Sign Language Proficiency Interview (SLPI) and the American Sign Language Proficiency Interview (ASLPI) in comprehensive sign language assessment programs (Bochner et al., 2016).

INTRODUCTION

Sign languages are important vehicles of communication and culture within Deaf communities, as well as in educational and other programs serving Deaf people. Many different sign languages are used in Deaf communities throughout the world, each having its own phonology, morphology, syntax and lexicon. Gallaudet University (Gallaudet Library, nd) lists 271 different sign languages used around the world in Europe (e.g., British Sign Language, German Sign Language), Africa (e.g., Ethiopian Sign Language, Zimbabwean Sign Language), the Americas (e.g., American Sign Language, Nicaraguan Sign Language, Brazilian Sign Language), Asia (e.g., Indian Sign Language, Chinese Sign Language), the Middle East (e.g., Israeli Sign Language, Saudi Arabian Sign Language), and Oceania (e.g., Australian Sign Language, Samoan Sign Language).

This chapter describes a novel approach to the assessment of second language (L2) learners' abilities in American Sign Language (ASL). Although ASL is one of the most commonly taught second languages in American colleges and universities (Goldberg, Looney & Lusin, 2015), few assessment instruments have been developed for the evaluation of ASL ability in L2 learners. The dearth of sign language tests for L2 learners, especially tests of sign language reception, poses a problem for instructional programs because of the need for documenting instructional outcomes and program effectiveness, appropriate course placement, and learners' proficiency. Similarly, the dearth of such tests may pose a problem for teacher certification programs because of the need to obtain valid and reliable measures of candidates' ASL proficiency. The scarcity of valid and reliable tests is not unique to ASL. Inspection of the Sign Language Assessment website (www.signlang-assessment.info/) provides an indication of just how scarce sign language tests are, especially tests intended for adult L2 learners.

Tests of ASL Ability: The Sign Language Proficiency Interview (SLPI: Caccamise & Newell, 1995; Newell, Caccamise, Boardman & Holcomb; 1983) probably has been the most widely used and well-known measure of adult L2 learners' ASL ability over the past 20-25 years. It was developed at the National Technical Institute for the Deaf (NTID) in the 1980's. The SLPI is primarily an expressive measure in which the test taker engages in conversation with a trained interviewer and produces a sample of signed discourse that is recorded on video and subsequently evaluated by a panel of three trained raters. The SLPI was modeled on the American Council on the Teaching of Foreign Languages' Oral Proficiency Interview (OPI) and, like the OPI, the reliability and validity of the SLPI are problematical in several respects (Chalhoub-Deville & Fulcher, 2003). Specifically, the interview procedure and the

assignment of ratings are inherently subjective and susceptible to situational and rater bias. Nevertheless, one published study has reported evidence of interrater reliability and very limited and indirect evidence of construct validity (Caccamise & Samar, 2009). Additional evidence of reliability and validity is sorely needed, however. In the absence of affirmative psychometric evidence, the test's validity and reliability must be considered problematical.

The methodology used in the SLPI has been applied in a similar test known as the American Sign Language Proficiency Interview (ASLPI: www.ets.org/praxis/ct/aslpi/ and www.gallaudet.edu/asl-diagnostic-and-evaluation-services/). The ASLPI closely resembles the SLPI (and by extension, the OPI). Both tests engage the respondent in a 20-25 minute conversation that is intended to provide a holistic measure of ASL proficiency using an 11-point ordinal rating scale. The conversation is recorded on video and evaluated by a panel of three trained raters. The rating procedure used in both tests explicitly considers the dimensions of grammar, vocabulary, production accuracy, fluency, and comprehension. The tests' administration and scoring procedures are very similar to one another, as are their rating scales.

The ASLPI is distributed by the Praxis testing program at the Educational Testing Service (ETS). It is intended to measure the overall ASL proficiency of candidates planning to teach ASL or Deaf and hard-of hearing students in primary and secondary schools. The test also has been used to evaluate the ASL ability of faculty and staff at Gallaudet University and other institutions. The test is delivered and evaluated by ASL Diagnostic and Evaluation Services at Gallaudet University, which has reported good evidence of its reliability and limited evidence of construct validity (www.gallaudet.edu/asl-diagnostic-and-evaluation-services/). The evidence of construct validity indicates that the ASLPI measures a unified construct, and ASL Diagnostic and Evaluation Services interprets this construct as overall ASL proficiency. As with the SLPI, additional data are needed to substantiate the test's validity.

A third test of ASL ability designed for prospective teachers is the American Sign Language component of the California Subject Examinations for Teachers (CSET: ASL). Developed by the California Commission on Teacher Credentialing (CST) and Pearson Education, Inc. (CST, 2013; Professional Services Committee, 2009), the CSET: ASL is composed of three separate subtests each of which contains a combination of multiple-choice and constructed-response questions. The first subtest covers literary and cultural texts/traditions and cultural analysis and comparisons. The second subtest covers general linguistics, language structures, contrastive analysis, sociolinguistics and pragmatics. The third subtest covers error analysis, comprehension and production.

A fourth test of ASL ability designed for prospective teachers is the GACE American Sign Language Assessment developed for the Georgia Professional Standards Commission and distributed by the Praxis program at ETS (http://gace.ets.org/s/pdf/gace_taa_g_american_sign_language.pdf). The first part of the GACE test consists of multiple-choice questions covering a range of content area knowledge from fields associated with language teaching and learning, as well as the ability to apply principles from these fields. The second part of the test consists of a 20-minute interview conducted in ASL covering five questions.

Unlike other measures designed for adult L2 learners, the American Sign Language Discrimination Test (ASL-DT) is a computer-based adaptive test of sign recognition ability. The test measures L2 learners' ability to discriminate phonological and morphophonological contrasts (minimal pairs) in ASL. Using a paired comparison discrimination task and Rasch

analysis to model item difficulty and person ability, the ASL-DT provides an objective, valid and reliable measure of ASL skills that can serve as a proxy measure of ASL proficiency. Both its item content and test administration methodology differ substantially from procedures currently used in other tests of ASL abilities (Bochner et al., 2016).

The ASL-DT is an objective assessment that can help to overcome some of the subjective factors that can compromise the validity of subjective proficiency tests as the SLPI and ASLPI for certain individuals under some testing conditions. Expressive tasks, such as the SLPI and ASLPI, provide opportunities for the test taker to control their responses and avoid problematic or difficult constructions, at least to some extent. This feature of expressive tasks introduces another potential source of measurement error in test scores. In contrast, receptive tasks, such as the ASL-DT, require test takers to respond to items without permitting them to avoid challenging constructions.

ASL Proficiency: Spoken languages having a written form are comprised of four correlated components of language proficiency (speaking, listening, reading and writing), as has been demonstrated in studies involving the paper-based Test of English as a Foreign Language (TOEFL: Educational Testing Service, 1992) and generally assumed within the field of language testing (ACTFL, 2012). In a recent study of the factor structure of the internet-based TOEFL, a single higher-order general factor (L2 ability) and four first-order factors corresponding to the four components of language proficiency were identified. The loadings for the four first-order factors on the higher-order general factor were as follows: Listening = 0.97; Reading = 0.91; Writing = 0.91; and Speaking = 0.78 (Sawaki, Stricker & Oranje, 2009). These results confirm that the receptive and expressive dimensions of language processing are closely correlated components of overall language proficiency, suggesting that receptive measures capture a general dimension of language proficiency.

In languages that do not have a written form, such as ASL and other natural sign languages, language proficiency is composed only of a visual receptive and a manual expressive component. Assuming that the associations between phonological discrimination and language comprehension and between the receptive and expressive dimensions of language found in previous studies of other languages extend to ASL, the ability to discern phonological and morphophonological contrasts in ASL should provide a proxy measure of overall ASL proficiency. For example, in a study of an older version of TOEFL, Pike (1979) found that subjective evaluations of expressive language (i.e., oral interviews and writing samples) correlated closely with objective scores on test sections evaluating receptive dimensions of language use and language knowledge (i.e., listening comprehension, reading comprehension, vocabulary, and grammar). Pike's findings are indicative of the relationships among the sub-skills comprising language proficiency and lend support to the statement that "it is commonly recognized that these skills are interrelated; persons who are highly proficient in one area tend to be proficient in the other areas as well" (Educational Testing Service, 1992, p. 32).

Purpose: This chapter builds upon previous work indicating that the evaluation of learners' ability to recognize linguistic contrasts can provide useful information about their acquisition of ASL (Bochner, Christie, Hauser & Searls, 2011), as well as previous work indicating that the ASL-DT may provide a useful complement to measures such as the SLPI and ASLPI in comprehensive sign language assessment programs (Bochner et al., 2016). Specifically, the chapter reports the results of a study designed to enlarge the ASL-DT item pool to expand the effectiveness of the test across the full range of L2 learners' ASL abilities.

A set of 280 items was developed and administered to a sample of 178 adults having ASL proficiency levels extending from beginners to native signers. Secondary goals of the study included providing additional evidence of the test's reliability and validity, as well as providing preliminary evidence of the effectiveness of the adaptive test. The ASL-DT adaptive test is available at <https://apps.ntid.rit.edu/ASLRC/login/login.php>.

METHOD

Participants: The participant sample was composed of 178 individuals ranging in age from 12 to 58 years (mean = 22.2 years, sd = 6.1). Participants were asked to provide a self-evaluation of their ASL skills on a scale of 1= no ability and low ability, 2= intermediate ability, and 3= high and native-like ability, as well as other demographic information as displayed in Table 1.

Test Materials: A set of 280 items was developed and recorded on digital video for presentation to participants. Forty-eight of these items were newly recorded versions of the items used in previous research (Bochner et al., 2011; Bochner et al., 2016), and the remaining 232 items were newly developed and recorded. The items were developed by a team of fluent Deaf signers who teach ASL and Deaf Studies at NTID, and some of them were modified based on feedback from the native signers who produced the signed utterances on video. The items consisted of pairs of ASL utterances, most of which contained linguistic contrasts. The test items were divided into a set of five linguistic categories. Four categories contained phonological contrasts: Location (47 items), Orientation (30 items), Handshape (58 items), and Movement (53 items). One category contained morphophonological contrasts in number incorporation, directional verbs, noun classifier usage, and verb inflection: Complex Morphology (40 items). The sixth and final category did not contain any contrasting linguistic elements: Same (52 items). Examples of each category are provided below:

Orientation:	WE <i>SUSPENDED</i> /GOOD-FRIEND HARD BELIEVE "It is hard to believe that we're suspended!" "It is hard to believe that we're good friends!"
Handshape:	<i>POTATOES</i> /TIMING GOOD "The potatoes are good." "The timing is good."
Location	WOW YOU <i>SMART</i> /LUCKY "Wow, you are smart." "Wow, you are lucky."
Movement	<i>MAN-IX (POINTING)</i> HIKING/MAN-IX AWKWARD "That man is hiking." or "The man is hiking." "That man is awkward." or "The man is awkward."
Complex Morphology	NORMAL AGE LEARN+++

LANGUAGE WHEN (rhq) AROUND TWO-YEARS-OLD/THREE-YEARS-OLD	
“The normal age to acquire language is approximately 2 years old.”	
“The normal age to acquire language is approximately three years old.”	
MY DOG-HAIR THICK (CL:C)/THIN (CL:G)	
“My dog’s hair is thick.”	
“My dog’s hair is thin.”	
Same	STORY-IX (POINTING) UNDERSTAND?
	Do you understand the story?

Table 1. Participant Demographics by Proficiency Group

Measure	Level	Proficiency Group					
		Low		Intermediate		High	
		M	SD	M	SD	M	SD
Age (years)***		20.1	2.6	22.4	5.5	26.0	10.5
		%	N	%	N	%	N
Gender***	Female	54.6	30	83.2	74	66.7	18
	Male	45.4	25	16.8	15	33.3	9
Hispanic Ethnicity*	Hispanic	0	0	6.6	6	11.1	3
	Non-Hispanic	100	56	93.4	85	88.9	24
Race	White	83.9	47	82.4	75	70.4	19
	Black/African American	3.6	2	3.3	3	7.4	2
	Asian	10.7	6	4.4	4	7.4	2
	Other	1.8	1	9.9	9	14.8	4
Childhood SES	Low	8.9	5	14.8	13	16.0	4
	High	91.1	51	85.2	75	84.0	21
Deaf Parents***	One or more	0	0	2.2	2	22.2	6
	Neither	100	56	97.8	89	77.8	21
Hearing Status***	Hearing	100	56	95.7	88	74.1	20
	Deaf	0	0	4.3	4	25.9	7

* $p < .05$; *** $p < .001$

Procedure: Each test item contains two pairs of ASL sentences. The sentences range in length from three to about 10 signs, with most sentences containing 5 – 7 signs. Each pair of sentences includes a standard sentence followed by a comparison sentence. The sentences are identical except for one contrasting element in items containing phonological and morphophonological contrasts. The contrasting element represents a minimal pair. The test taker must decide if the sentences in each pair are the same or different from each other and respond by selecting ‘Same’ or ‘Different’ with a computer mouse. In effect, each sentence pair represents one trial and, for each item, the test taker must respond to two trials. Any combination of ‘same’ and ‘different’ (S and D) trials is possible, allowing for four potential response outcomes: S-D, D-S, D-D, and S-S. Although two responses are required for each item, an item is scored correct if and only if responses to both trials are correct. No partial credit is awarded. The reason each item consists of two trials with all combinations of

response outcomes being possible is that two trials increase the difficulty of the task and reduce chance-level performance.

The assessment procedure is illustrated below in the representation of one item (two trials). In this example, an English gloss of the ASL sentence is presented with the contrasting element (minimal pair) underlined. The same standard sentence is used in each pair.

Trial 1

BUS, IX-GROUP-CHILDREN WAIT (standard sentence)

“The group of children is waiting for the bus.”

BUS IX-GROUP CHILDREN WAIT+++ (comparison sentence)

“The group of children is waiting a long time for the bus.”

Trial 2

BUS, IX-GROUP-CHILDREN WAIT (standard sentence)

“The group of children is waiting for the bus.”

BUS IX-GROUP CHILDREN WAIT (comparison sentence)

“The group of children is waiting for the bus.”

Video Recordings: Test stimuli were produced by three native signers, two males from Michigan and one female from Louisiana. In most cases, the standard and two comparison sentences comprising each item were produced by different signers. The purpose of varying signers within each item was to enhance non-contrastive (allophonic) variation in sign production associated with individual and dialectal differences among the signers. As such, our intent was to create a set of natural, yet variable stimuli. The objective here was to make the discrimination task more challenging and, at the same time, more authentic for respondents. In actual communication situations occurring in the real world, variation of this sort is ubiquitous and frequently encountered by L2 learners in their interactions with native signers.

All utterances were produced in a TV studio with proper lighting and background, and digitally recorded by a professional videographer. The signers watched a recording of each utterance as a prompt, and then attempted to replicate it three times under the supervision of a fluent signer who directed each recording session. The videographer worked with a native signer to select the best (clearest and most representative) utterances and edit the selected utterances into a set of mp4 files. The mp4 files comprising each item were reviewed on three separate occasions by a team of fluent signers to insure their accuracy and consistency. As a result, the utterances contained in the test have been carefully and thoroughly checked to assure quality and accuracy.

Data collection: The 280 items were divided into eight separate lists of equal length. A maximum of five lists were self-administered by each participant over a period of a few weeks typically 2-4 weeks. Before data collection began, each participant completed a demographic questionnaire that enabled us to collect information regarding their age, gender, experience with ASL, self-evaluation of ASL proficiency and other demographic characteristics. Each participant also completed a set of 5-10 practice items prior to engaging in data collection. To ensure that they understood the task, practice was terminated after the participant responded correctly to at least three consecutive items.

In addition to completing a maximum of five lists of items, a small set of participants also completed one adaptive testing session. The adaptive testing software was modeled on an

adaptive test of speech recognition developed by two of the authors (Bochner, Garrison & Doherty, 2015). The test materials were drawn from the pool of 280 items administered to participants in this study, which had undergone a preliminary Rasch scaling analysis to determine their difficulty values as described below.

Adaptive testing and the Rasch model: The Rasch model of person measurement (Wright & Stone, 1979) has been developed within a mathematical framework known as item response theory (IRT). The model can be applied to the analysis of data and used in the scaling and selection of items in adaptive testing. The Rasch model is the simplest IRT model and contains only one parameter; i.e., item difficulty. Item difficulty is an intrinsic parameter of IRT models, with variations in item difficulty being necessary for the creation of item pools used in adaptive testing. Like the stimuli used in adaptive psychophysical procedures such as vision testing, the stimuli used in adaptive testing are scaled along a continuum extending from low to high degrees of magnitude. However, rather than representing a physical construct such as the size of letters on an eye chart, the continuum in this instance represents a domain of human performance, sign recognition ability (Bochner et al., 2011; Bochner et al., 2016).

The Rasch model was used to quantify the difficulty of test items scaled along the continuum of sign recognition ability. The continuum provides an implicit hierarchy that enables the adaptive testing procedure to utilize an “up-down” method of item selection to array respondents on the same scale as the items. When data are found to fit the model, the measurement of persons and calibration of items enable us to place persons and items on a common scale that functions according to the rules of arithmetic (Shaw, 1991). This scale uses a logarithmic unit of measurement known as the logit to express both item difficulty and person ability.

Adaptive testing offers an efficient and precise approach to the measurement of human abilities. The approach is efficient because it requires a minimum number of items, and it is precise because standard errors are specific to individual respondents and are estimable (and controllable) during the testing process. The standard error associated with the respondent’s performance is used to limit the range of difficulty from which items are selected for presentation within each test session. In limiting the range of difficulty from which items are selected, the up-down procedure minimizes measurement error.

An adaptive test like the ASL-DT requires a large pool of items distributed over a wide range of difficulty. The up-down procedure requires an item pool having a great deal of redundancy in difficulty values because the procedure must have a sufficient number of items available within low, intermediate and high levels of difficulty, as well as points in between. Using the standard error as described above, the up-down procedure administers items within an increasingly narrow band of item difficulty to precisely bracket the respondent’s level of sign recognition ability. Since testing terminates when items within the range delimited by the standard error have been exhausted, it is important for the item pool to contain a significant amount of redundancy in difficulty values so that reliable results can be obtained. It also is important to have sufficient diversity in the item pool so that in subsequent test sessions, respondents are not presented with too many items repeated from prior sessions.

RESULTS

Rasch analysis: The test data that are the subject of Rasch scaling analysis are first organized into a persons by items response matrix with binary cell entries (1/0) representing correct/incorrect responses to each of the items administered to individual respondents. In the present study, data provided by 178 respondents to subsets of the 280 test items were evaluated for fit to the measurement model. When data are found to fit the measurement model, the responses of persons to items are effectively additive. Moreover, there is indication that the items comprising a measurement system form a hierarchy along the variable which they share (i.e., sign recognition ability).

The joint maximum likelihood estimation (JMLE) procedure utilized in Rasch analysis to compute item difficulty and person ability estimates accommodates “incomplete” data designs (i.e., missing data are not problematic). That is because, for each of the person and item parameters to be estimated, there exist sufficient statistics (i.e., the *marginal* raw scores and counts of non-missing data observations). During the calibration process, the observed marginal counts and the observed and expected marginal scores are computed from the same set of non-missing observations. The item and person parameter estimates that are the *product* of Rasch scaling analysis enable the estimation of the outcome of any person-item interaction (present or missing) within the measurement frame of reference.

In the “real” world, data never accord with a statistical model exactly. To determine the extent to which data deviate from model expectations, Rasch scaling procedures rely upon mean-square fit analyses. These analyses are intended to identify *items* within a collection of stimulus materials that deviate seriously enough from model expectations that they distort or degrade a measurement system, as well as to identify *persons* whose test behavior contradicts the model. The removal of *specific* items and persons from the calibration analysis is a judgment call. In the end, the analytic goal is to determine if reasonable *adjustments* to the data produce a measurement system that operates according to the rules of arithmetic.

A mean-square fit statistic greater than 2.00 logits constituted the criterion value for the removal of items/persons from the final ASL-DT calibration. Accordingly, two of the 280 items included in the item collection were excluded from the item bank, resulting in a final set of 278 items. Similarly, the test records of three participants from the sample of 178 respondents were excluded from the final calibration analysis.

Figure 1 illustrates the distribution of difficulty (d_i) values (represented as *MEASURE* on the horizontal axis) for the 278 ASL-DT test items fitting the Rasch model. The item d_i are centered at 0.00 logit (observed $sd = 1.24$ logits). The distribution of difficulty of the stimulus materials comprising the ASL-DT item pool is essentially normal, with an effective operating range of -3.00 to +3.00 logits. The minimum observed d_i was -2.69 logits, and the maximum observed d_i was 5.19 logits (range = 7.88 logits).

For the 175 participants whose test records conformed to model expectations, the mean person ability (b_n) measure was found to be 0.64 logit ($sd = 0.72$ logit). The minimum observed b_n was -1.18 logits, and the maximum observed b_n was 2.86 (range = 4.04 logits). Figure 2 (right-hand panel) illustrates the distribution of b_n measured across the range of study participants. Like the item d_i distribution, the distribution of b_n is essentially normal. The d_i distribution is reproduced in the left-hand panel of Figure 2 to illustrate the extent to which the stimulus materials comprising the ASL-DT are targeted on the persons tested.

Reliability coefficients associated with Rasch scaling analyses take two forms. The person separation reliability (PSR) statistic indicates how well a set of test items can separate the b_n levels of the persons tested. The item separation reliability (ISR) statistic indicates how well the sample of persons tested can order the items in terms of their d_i values. Together, these two statistics are useful during the test development process in the review and refinement of item content to maximize the power of an assessment system to discriminate test-takers at differing b_n levels.

From the scaling analysis performed on the test records of 175 individuals who responded to subsets of the 278 ASL-DT items, the PSR was found to be .83. The ISR based upon the same data set was found to be .93. These statistics are expressed and interpreted in the same manner as standard reliability coefficients (i.e., correlations). As summary statistics, the observed PSR is very good, while the ISR is excellent. Together these indices confirm what is shown in Figure 2, namely that the study participants were, on average, relatively good signers, nonetheless exhibiting a wide range of ability. Finally, these statistics indicate that the ASL-DT is comprised of items spanning a wide range of difficulty, hence capable of testing persons across a broad range of ability.

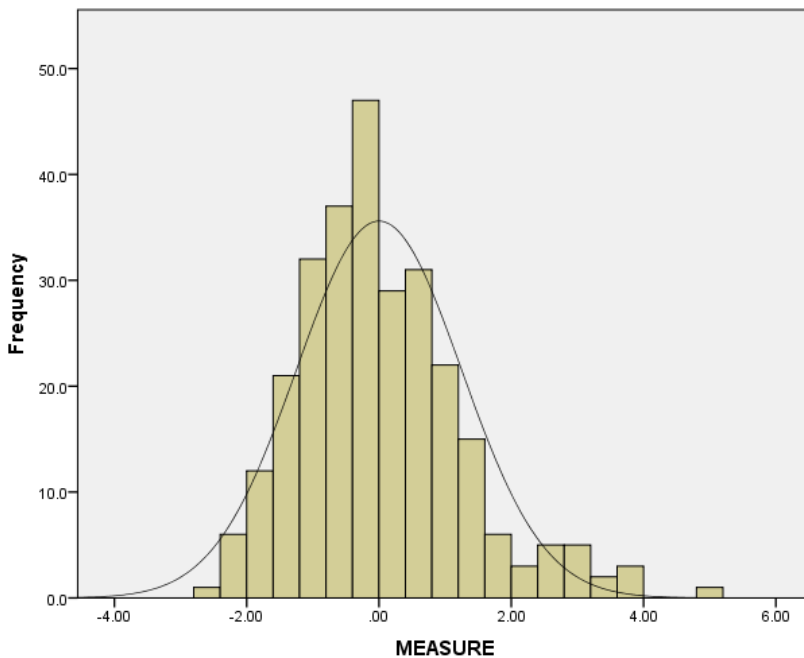


Figure 1. Distribution of d_i values for ASL-DT items fitting the Rasch model.

Adaptive testing: Computerized adaptive testing has become commonplace in the social and behavioral sciences. Adaptive tests are intended to minimize the number of observations required for the measurement of a human characteristic or attribute, simultaneously maximizing the quality of information that is provided about individuals in the measurement process. In the present work, 35 self-administered ASL-DT adaptive test records were obtained. While the primary goal of the present work was to enlarge the database upon which the d_i calibrations were based, item calibration values based upon a smaller database in an

earlier phase of the R & D effort enabled the development of the ASL-DT adaptive testing software.

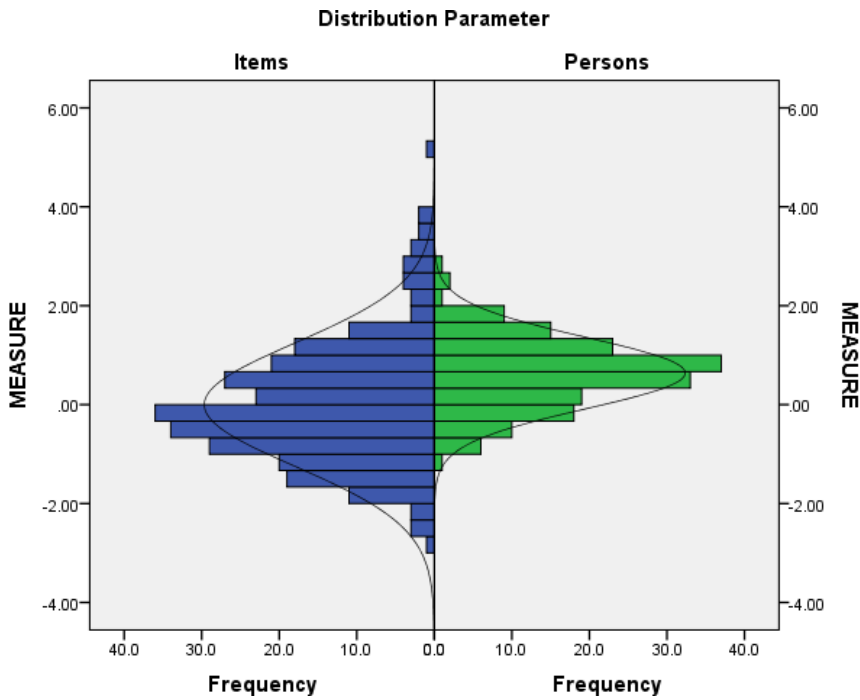


Figure 2. Map of ASL-DT item and person locations along the variable they share.

Across the 35 adaptive test records, the mean ability level of participants was found to be 1.96 logits ($sd = 0.99$ logit). The minimum observed b_n was -0.81 logit, the maximum observed b_n was 3.35 logits (range = 4.16 logits). Twenty of the 35 test records were provided by individuals who self-reported that they were “Able to Communicate Fairly Well.” The remaining 15 test records were provided by individuals who reported that they had “A Lot of Experience” or were “Fluent Signers” of ASL. Mean b_n on the adaptive tests for the former (i.e., intermediate level) group of persons was 1.64 logits ($sd = 1.02$). For the latter (i.e., advanced) group of persons, mean b_n was 2.39 logits ($sd = 0.78$). A comparison of these means yielded a statistically significant difference, $F(1,33) = 5.54$, $p < .05$. Thus, there is consistency between what is perceived and what is measured in terms of participants’ ASL proficiency level.

The average number of items administered in an adaptive testing session across the 35 test records was 27 (minimum = 10, maximum = 40). In 26 cases testing was terminated when items *remaining* in the bank lacked sufficient information (i.e., item appropriateness criterion was met). In the remaining nine cases, testing terminated when the test length limit was met (i.e., maximum items = 40). At this end of the b_n distribution, we expect the item appropriateness criterion to be the dominant reason for terminating a testing session.

On average, the standard error associated with the b_n measures for the 35 test records was found to be 0.43 logit. This translates to a reliability index = .82, comparable to the PSR of .83 observed for the larger sample of 175 persons tested. The largest observed standard error (for an individual test record) was 0.65, translating to a reliability index = .58. The lower

level of reliability observed here is entirely attributable to test length at termination (i.e., 10 items). The test records associated with this outcome were provided by fluent signers scoring at the extreme upper end of the b_n distribution, where standard errors will be at maximum value. The smallest standard error observed across the adaptive test records was 0.32, translating to a reliability index = .90. The test records relevant to this outcome were provided by test-takers whose b_n measures fell within areas of the d_i distribution populated with a sufficient number of items appropriate for administration.

Criterion validity: Table 2 shows mean performance in logits on the ASL-DT for each proficiency level. As expected, the intermediate proficiency group had significantly higher mean logit scores than the low proficiency group (planned comparison, $F(1,172) = 42.08$, $p < .0001$), and the high proficiency group had significantly higher mean logit scores than the intermediate proficiency group (planned comparison, $F(1,172) = 12.21$, $p < .001$). These proficiency group differences remained significant after adjusting for participant age, gender, race/ethnicity, and childhood SES (Low versus Intermediate Proficiency, $F(1,160) = 38.55$, $p < .0001$; Intermediate versus High Proficiency, $F(1,160) = 4.49$, $p < .05$).

Table 2. ASL-DT means in the logit metric, standard deviations (SE), and n's for ASL proficiency groups

Proficiency Group	Mean	SD	n
Low	0.11a	0.60	56
Intermediate	0.78a,b	0.57	92
High	1.24b	0.72	27

^a low vs intermediate, $p < .0001$.

^b intermediate vs high, $p < .001$.

Preliminary logistic regression analyses using ASL-DT logit scores as the predictor of proficiency group probability and participant age, gender, race/ethnicity, and childhood socioeconomic status as covariates revealed that after the ASL-DT scores were accounted for, only age made a significant contribution to group probability prediction. However, age accounted for less than 1.7% of the predicted variance. Therefore, only the ASL-DT logit scores were used in further analyses of proficiency group classification accuracy.

Figure 3 displays the ROC curves for group classification of the 175 individuals in the sample produced by discriminant analysis using the ASL-DT logit scores as the predictor. Table 3 displays the percentage of accuracy of classification, as indicated by the area under the ROC curves, sensitivity (proportion of true positives), and specificity (proportion of true negatives) for the high, intermediate, and low groups. The Self-Identified by Predicted classification matrix on the right displays the numbers of correct assignments and misassignments by the discriminant function.

The majority of low proficiency participants was classified as low proficiency (41 of 56). Intermediate proficiency participants were most often classified as intermediate proficiency, while misclassifications were spread broadly between the adjacent categories. High proficiency participants were most often classified as high proficiency. These results indicate that the ASL-DT most often classified participants into their self-identified proficiency category, and for the low and high proficiency categories, which permitted misclassification

over two proficiency steps, the ASL-DT placed the large majority of those participants within ± 1 proficiency group step from their self-identified group.

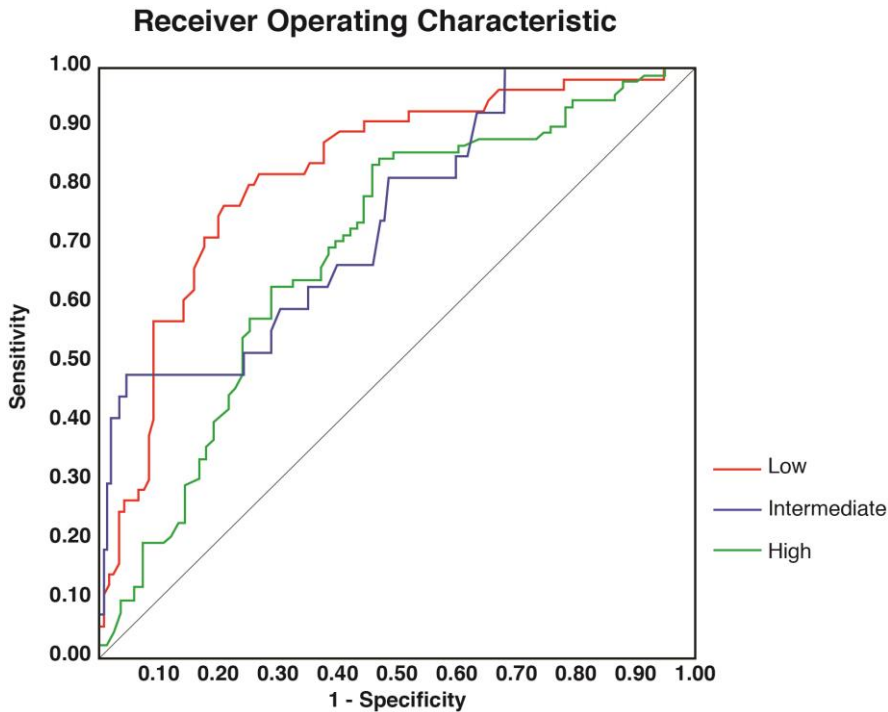


Figure 3. ROC curves for the ASL-DT logit measure.

Table 3. ROC statistics for the ASL proficiency groups.
(Accuracy = area under the ROC curve. Predicted Proficiency Group:
Group membership predicted by the discriminant function
based on ASL-DT logit scores)

	Proficiency Group			Actual Proficiency Group	Predicted Proficiency Group		
	Low	Intermediate	High		Low	Intermediate	High
Accuracy	82.30%	69.20%	74.50%	Low	41	11	4
Sensitivity	0.732	0.446	0.481	Intermediate	19	41	32
Specificity	0.798	0.759	0.889	High	5	9	13

Age of acquisition of ASL is related to ASL proficiency (DeKeyser, 2012; Krashen, Scarcella & Long, 1982; Newport, 2005; Uylings, 2006) and, unlike self-ratings of ASL proficiency, which are highly subjective and prone to personal bias, age of acquisition of ASL has the advantage of being a relatively objective, although crude, ASL proficiency proxy. Therefore, as convergent evidence that the ASL-DT scores were objectively related to ASL proficiency, we examined the correlation between age of acquisition of ASL and ASL-DT proficiency scores. These two measures were positively correlated ($r = .40$, $p < .0001$), tending to validate the ASL-DT as an ASL proficiency proxy measure.

Finally, we used multiple regression to predict the ASL-DT logit scores from the self-identified proficiency categories and age of acquisition jointly. Significant variance in the ASL-DT scores was accounted for by both Self-Identified Proficiency group ($F[2,170] = 22.71, p < .0001$) and age of acquisition ($F[1,170] = 9.22, p = .0028$), independently. The significant independent contribution of age of acquisition to the ASL-DT measure demonstrates that the ASL-DT captures additional, objective proficiency-related variance that is not captured by the subjective self-identified proficiency ratings alone.

CONCLUSION

The results of this study indicate that the data fit the Rasch model of person measurement very well. As illustrated in Figure 1, the test items span a wide range of difficulty (7.88 logits), with an effective range extending from -3.00 to +3.00 logits. Consistent with the distributions of items and persons shown in Figure 2, the PSR was very good and the ISR was excellent. These results indicate that the ASL-DT is capable of measuring sign recognition across a broad range of ASL ability.

Since no objective, independent ASL proficiency test is available to act as a criterion measure to evaluate the concurrent validity of the ASL-DT Rasch measure, the participant sample was divided into three groups based on self-assessment of their ASL ability. The three groups acted as a *prima facie* criterion measure to evaluate the ability of the ASL-DT to detect group differences in average ASL proficiency and to statistically classify individuals into proficiency groups. Discrimination among the three proficiency groups and the classification of individuals into self-identified proficiency groups in this chapter provides additional evidence of the construct and predictive validity of the ASL-DT Rasch measure.

Although the ASL-DT is a direct measure of learners' ability to discriminate phonological and morphophonological contrasts, the evidence presented in this chapter confirms that the test can serve as a proxy measure of ASL proficiency. The results presented here agree well with those of our previous validation study of the ASL-DT using an independent sample of participants and a greatly expanded item pool (Bochner et al., 2016). Bochner and colleagues (2016) used relatively objective sociolinguistic, academic, and job function criteria associated with different typical levels of lifetime ASL exposure to operationally define three different ASL proficiency groups. They showed that the ASL-DT displayed moderate to strong accuracy for classifying individuals into these objectively defined proficiency groups, and was substantially more accurate in correctly classifying individuals into proficiency groups than the most prominent subjective proficiency test (SLPI). Furthermore, the ASL-DT specifically outperformed the SLPI in its ability to discriminate between intermediate and high proficiency individuals. The present results regarding the ASL-DT's classification accuracy and its relationship to both subjective self-ratings and age of acquisition of ASL reinforce the conclusions of Bochner and colleagues (2016) regarding the relatively high accuracy of the ASL-DT as a proxy measure of sign language proficiency.

Furthermore, the nature of the discrimination tasks and how they relate to sign recognition, combined with data on intercorrelations among subskills comprising language proficiency (i.e., speaking, listening, reading and writing) and the factor structure of a

prominent language proficiency test (i.e., the internet-based TOEFL), support the contention that the ASL-DT can serve as an ASL proficiency proxy. As mentioned earlier, the ASL-DT is available at <https://apps.ntid.rit.edu/ASLRC/login/login.php>.

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Chapter 13

THE EFFECTS OF CONVERSATIONAL PARTNER FAMILIARITY IN DEAF SIGNERS

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ABSTRACT

The way in which an individual communicates changes based on various conversational aspects. Speakers adapt the form and content of their messages based on their judgments of what the listener knows and needs to know. Familiarity of a conversational partner affects verbal and nonverbal communicative behaviors. This is change in register, or language style, and is indicative of the ability to adapt to the listener. This study examined the effects of familiarity and the use of American Sign Language in deaf humans' conversational behaviors. Participants were deaf adults either living at or clients of a deaf assisted living facility. Participants were videotaped interacting with a conversational partner for 4 min each while playing a game. There were two conditions of trials: the partner was familiar versus unfamiliar to the participant. Two signing behaviors were measured: average duration of sign and reiteration of sign. All participants' duration of sign and reiteration of sign were significantly longer when interacting with an unfamiliar conversational partner. This research provides evidence for the linguistic aspects of ASL that are like spoken languages. These results add to research showing difference in conversational register in response to different types of partners.

INTRODUCTION

In face-to-face interactions, partners must initiate the conversation and then maintain it with constant adjustments and signals. For example systematic shifts in eye gaze, body posture, and head movements signal turn yielding behaviors (Duncan, 1972). With

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misunderstandings, partners repeat or revise appropriately (Brinton, Fujiki, Loeb, & Winkler, 1986; Brinton & Fujiki, 1991; Brinton, Fujiki, Winkler, & Loeb, 1986; Pearl, Donahue, & Bryan, 1981). Partners adapt the form and content of their messages based on their judgments of what listeners know and need to know.

Conversational partners are diverse, with variation occurring through differences in linguistic community, hearing ability, cognitive ability, age, status, or kinship. Partners make adjustment to these variations. In interactions with infants, caregivers often turn their statements into questions and use a higher-pitched voice (Schieffelin & Ochs, 1986). Speakers of Thai use different formality markers, pronominals, names, titles, and pragmatic particles depending upon their relationship to the listener (Iwasaki & Hori, 2001). Adults use politeness markers significantly more in conversation with their spouse than with a stranger (Premo & Stiles, 1983). Partners' coordination of function words such as prepositions and pronouns predicted whether the dyad would subsequently go on a date, which shows content reflecting interpersonal attitude (Ireland et al., 2010). Caregivers in nursing homes use slower speech rate and more variable pitch with elderly patients than with co-workers (Ashburn & Gordon, 1981). Also nurses used a higher pitched tone when speaking to patients at a nursing home versus a local hospital (Caporael, 2007). These adjustments also appear in young children when they simplify phrases and statements and use more variation in speech intonation while playing with inanimate objects such as a stuffed animal, and towards infant siblings (Dunn & Kendrick, 1982). Giles, Coupland, and Coupland (1991) reviewed a variety of behaviors such as utterance length, speech rate, vocal intensity, pausing frequency and length, gesture, posture, head nods, and facial affect that converge as speakers "adapt to each other's communicative behaviors" (p. 7).

One factor in interactions is the familiarity of the conversational partner. Across taxa, individuals react to strangers differently than to group members. A variety of species show individual recognition, including chimpanzees, fish, dolphins, birds, and wasps (see Tibbets & Dale, 2007 for review). Individual recognition also plays a role in group competition, dominance hierarchy, and mother/infant relationships across taxa (Tibbets & Dale, 2007). Social relationships with familiars can include a high degree of touching in both humans and nonhumans (Marler, 1976; Mehrabian, 1968). Humans stand closer to familiars than strangers regardless of crowd density (Burgess, 1983). Yet behaviors with strangers also can be quite aggressive. Chimpanzees show aggressive displays to neighboring chimpanzees, sometimes with fatal attacks (Goodall, 1986). Aggression among humans, particularly between separate groups, fills news stories daily. Humans and nonhumans react differently to familiars than strangers.

Systematic studies with humans have explored variation in general behavior based on familiarity. Among children, play in familiar dyads contained more social behaviors than in unfamiliar dyads (Doyle, Connolly, & Rivest, 1980). Lederberg, Ryan, and Robbins (1986) compared play among deaf, hearing, familiar, and unfamiliar dyads of children. Hearing children used more gestures, exaggerated facial expressions, and vocalizations with familiar than unfamiliar deaf partners. Deaf children used more pretend play and touching with familiar than unfamiliar hearing partners. Adults with Down syndrome showed differences in non-verbal behavior and body mobility with familiar versus unfamiliar partners (Leudar, Fraser, & Jeeves, 1981).

Researchers also have examined differences in speech during interactions with familiar versus unfamiliar partners. Children in familiar dyads exhibited significantly more

conversations, relevant utterances, and longer utterances than children in unfamiliar dyads (George & Krantz, 1981). Chisholm and Pitcairn (1998) examined conversational differences between friends and nonfriends in an established group. Exclusive utterances were utterances that were not directed toward or excluded an individual, and they were more frequent between nonfriends. Inclusive utterances were utterances that were directed towards or inclusive of an individual, and they were more frequent between friends. Another study examined children's responses to a misunderstanding with an adult interlocutor who was either an unfamiliar or the child's mother. Children used a larger number of lexical items in their speech revisions with unfamiliar than with their mothers (Tomasello, Farrar, & Dines, 1984). As adolescents individuals asked less direct questions to unfamiliar than familiar partners (Turkstra, 2001). Adults with cochlear implants were more likely to interrupt and use a loud voice with unfamiliar than familiar partners (Tye-Murray, Witt, & Schum, 1995).

ASL uses space and three-dimensional movement, and this can be measured in multiple ways. As spoken languages are broken down into series of vowels and consonants, ASL's sequential units are holds and movements. Holds are when the sign is held in place, and movements are when the sign is in motion (Liddell, 1984). Researchers have measured holds and movement using video analysis (Wilbur, 2009). For example Johnson and Liddell (2011) measured the period of time when the hand was moving. A lexical database of ASL described information, including duration, on nearly 1,000 signs (Caselli, Sehyr, Cohen-Goldberg, & Emmorey, 2017).

Variations occur in sign production for a variety of reasons. For example there are regional accents or dialects. American signers from Philadelphia sign differently than signers from other parts of the United States (Porzucki, 2015). The signs of Philadelphia signers retain ASL's historical roots to French Sign Language. Signers from different regions in Britain use different variations of colors and number signs. In that study variations in signs also occurred between different age groups (Stamp et al., 2014). African American signers in the United States use a larger signing space, and change form based on the audience (Sellers, 2012; McCaskill, Lucas, Bayley, & Hill, 2011). Demographic differences, identity, age, and the individual's familiarity with his or her signing partner also influence the way in which signers articulate signs (Valli & Lucas, 2000; Zimmer, 2000; Sutton-Spence & Woll, 1999).

In speech there is evidence that social settings and partners produce shifts in register. In signers there is less evidence for register shifts in response to partners. The objective of the current study was to investigate register shifts in ASL. Specifically it compared duration of signs and reiteration of signs in human interactions with familiar versus unfamiliar signing partners. The hypothesis was that the average duration of signs and number of reiteration of signs would increase from familiar to unfamiliar conversational partner conditions.

METHODS

Participants

Participants were recruited from the Chestnut Lane Assisted Living Community (CLALC) in Gresham, Oregon, USA. CLALC provided assistance and personal care for deaf individuals of all ages and their families. ASL was the predominant mode of communication.

As an assisted living facility, CLALC offered personal services and assisted care to support independence and privacy, while serving the unique needs of deaf residents. Participants volunteered via sign-up sheets posted on the community bulletin board. Participant recruitment began before data collection started and continued after trials began. Participation in this study was open to all ages and sexes who were fluent in ASL.

There were a total of 10 participants. Two participants were excluded from analysis due to filming error, yielding a total of 8 participants for analysis. All participants were between the ages of 20 and 58. There were two males and six females, and all were residents and/or clients of CLALC. They all signed a consent form. This study received approval from Central Washington University's Human Subjects Review Committee (H11079).

Conditions

Each participant participated in two separate trials on two separate days. During a trial the participant interacted in one of two conditions; either with a familiar or an unfamiliar interlocutor.

The familiar interlocutor was the director of CLALC (SA) and was the only interlocutor in the familiar condition. SA was familiar with each resident, fluent in ASL, and interacted regularly with members of CLALC.

The unfamiliar interlocutor was someone the participants had never met before, had never been to CLALC, and was the only interlocutor in the unfamiliar condition. This interlocutor was recruited from Portland State University's (PSU) advanced ASL classes and recommended by the instructor of that class. The interlocutor took an assessment of ASL fluency including vocabulary and modulation tests, and an interview with the PSU ASL instructor.

Materials

The participant and the interviewee played the board game *Guess Who?* during each trial. *Guess Who?* was a board game in which two players tried to deduce the identity of their opponent's mystery person. Players asked each other yes/no questions that helped narrow the pool of possibilities. In this game through process of elimination, the identity of the mystery person becomes evident. This game elicited descriptive categories of glosses such as MAN, WOMAN, BLONDE, and BRUNETTE. Thus many of these glosses occurred repeatedly throughout all trials. This provided data for a comparison of glosses between the familiar and unfamiliar condition. A video camcorder recorded the 4 min trials.

ASL is translated to English by using a gloss. A gloss is the written word for word translation from one language to another, and in the case of ASL is also used in notating a sign's facial and body grammar (Hanson & Bellugi, 1982). For example, a gloss for the word "tree" would be TREE. In this chapter glosses appear with all capital letters. Glosses are distinct from signs; the sign is the action while the gloss is the name for the action.

Procedure

Trials occurred at a table in the reading room at CLALC. The reading room was a common area where residents often read books or played games. The experimenter (AD) arranged the game and camera before trials began. The camera was angled to ensure that the participant was visible in the frame.

AD asked participants to sign up for two trials within the same week. Participants were not aware of the order of the presentation of conditions until they participated in the first trial. The order of presentation of conditions for each participant was randomly assigned. There were a total of 16 trials, two for each participant analyzed in the study.

When a participant arrived for his or her first scheduled trial, AD obtained verbal consent to turn on the video camera and begin recording. This was done to establish that the participant was comfortable in front of the camera. AD then discussed with the participant the procedure of the trial.

AD explained to participants that they would meet with an interlocutor and play a game of *Guess Who?* for 4 min. AD asked participants if they had any questions before the interaction began and explained that they were welcome to ask questions at any time. AD instructed that if the game was finished before the end of the 4-min trial, the interlocutor and participant should start another game. AD left the room after the trial began. AD timed each trial on a stopwatch, and entered the room after 4 min to notify participants that the trial was over and to stop the recording. Then AD reminded the participant of the date and time of the second trial. If it was the second trial, participation in the study was complete.

Data Selection

AD transcribed all video footage for each participant. When AD observed a sign on the video, she extracted a video clip of the sign and saved that footage into a separate file. The 3 s before and after the sign occurred were included in the video clip. The beginning of a sign was defined by the time the hand(s) began moving, and the end of a sign was defined as when the hand(s) moved out of the sign formation or until the hand(s) set to rest. Each video file had a label that represented the participant with a code, the gloss, and a number representing the condition to ensure coders were blind to the condition. A total of 311 video clips were compiled of all signs that occurred in each condition for all participants.

To obtain video transcription reliability, another coder who is fluent in ASL viewed 20% of the total video data and transcribed it. Agreement between AD and the second coder was 92%. For all video clips where AD and the second coder disagreed, the two coders viewed the clips together to agree on a gloss.

From the transcript AD made a list of each participant's glosses in each condition. From this list for each participant, AD selected glosses that occurred in both the familiar and unfamiliar conditions for analysis and subsequent comparison. For example, if a participant signed YES BOY in the familiar condition and signed BOY NO in the unfamiliar condition, AD selected BOY for analysis. Another participant may not have signed BOY and instead may have signed GIRL in both conditions. In that case, AD selected GIRL for analysis. If a gloss only occurred in one condition, it was excluded from analysis for that participant. This selection process yielded 17 glosses which were BALD, BEARD, BLACK, BROWN, EYES,

GIRL, GLASSES, HAIR, HAT, HAVE, MAN, NAME, NO, PERSON, WHITE, WOMAN, and YES. Then AD selected all the video clips that contained signs of these glosses. This resulted in 205 video clips of signs. Table 1 shows the glosses for each participant and the number of times glosses occurred in each condition before the selection.

Data Coding

Sign Duration

A coder (LW) viewed each video clip of a sign and recorded the start and end of the sign to the nearest tenth of a second. The start of a sign was when the signer's hand or hands begin moving to form a sign. The end of a sign was when the signer's hand or hands changed from the sign's configuration or moved to a resting position. LW had the option to watch a clip as many times as needed to record the correct time. LW had a one-term classe in ASL training, and an additional 2 years of experience using ASL.

To test for interobserver reliability in sign duration a second coder coded 20% of the total data, which was 41 video clips. This coder had a one-term class in ASL, and 5 years of experience using ASL. The interobserver agreement for the start of a sign was 94% and for the end of a sign was 91%.

Sign Reiteration

Gardner, Gardner, and Drumm (p. 47, 1989) defined reiteration of a sign as the same sign recurring immediately within a single utterance. For example, a participant may form the sign BOY or may reiterate the sign BOY BOY BOY. This definition was used to record the number of times a sign of the same gloss occurred within a clip. AL recorded how many times a sign was reiterated in each clip. AL had the option to watch each clip as many times as needed to record the correct number of reiterations.

Table 1. Number of signs of each gloss for each participant

Participant	Gloss	# of Video Clips	
		Familiar Condition	Unfamiliar Condition
P ₁	EYES	1	1
	GLASSES	1	1
	HAIR	1	1
	HAVE	2	2
	NO	3	5
	PERSON	1	2
	YES	2	1
P ₂	BALD	1	1
	BLACK	1	3
	GIRL	1	1
	GLASSES	1	1
	HAIR	1	4
	HAT	1	2
	MAN	1	1
	NO	4	5
	YES	2	5

Participant	Gloss	# of Video Clips	
		Familiar Condition	Unfamiliar Condition
P ₃	HAT	1	1
	HAVE	3	4
	NAME	1	3
	NO	5	2
	YES	1	2
P ₄	HAIR	1	1
	HAT	1	2
	NO	2	3
	YES	3	4
P ₅	BEARD	1	1
	GLASSES	1	1
	HAVE	2	5
	NO	1	1
	PERSON	4	3
	YES	3	4
P ₆	BALD	1	1
	GLASSES	1	2
	NO	4	5
	WOMAN	2	1
	YES	4	3
P ₇	BROWN	1	1
	GLASSES	3	4
	HAIR	2	1
	NO	1	1
	PERSON	5	4
	WHITE	1	2
	YES	1	2
P ₈	GLASSES	1	1
	HAT	1	2
	HAVE	3	1
	NO	3	4
	WOMAN	2	2
	YES	1	3

To test for interobserver reliability a second coder coded 20% of the total data, which was 41 video clips. The interobserver agreement for repetition of a sign was 94%.

Data Analysis

The analysis required an equal sampling of each sign in each condition for each gloss for each participant. In many cases, participants produced an equal number of signs for each gloss. For example, P₁ signed EYES one time in each condition. In other cases, a participant signed a gloss an unequal number of times in each condition. For example, P₁ signed NO three times in the familiar condition and five times in the unfamiliar condition. In this case

AD randomly selected three video clips from the unfamiliar condition. This ensured an equal number of video clips of the gloss NO in each condition. A total of 88 video clips remained for comparison, 44 in each condition.

A paired sample t-test compared the mean duration of signs between conditions. The confidence interval was set at 95%. A paired sample t-test compared the mean number of reiterations of signs in each condition. The confidence interval was set at 95%.

RESULTS

Table 2 shows the average sign duration in each condition for each participant. Signs had significantly longer durations in the unfamiliar condition ($M = 1.2$ seconds, $SD = .39$) than the familiar condition ($M = .88$ seconds, $SD = .24$); $t(7) = 2.542$, $p = .0386$.

Table 3 shows the mean number of reiterations in each condition for each participant. Participants reiterated signs significantly more often in the unfamiliar condition ($M = 2.41$, $SD = .97$) than the familiar condition ($M = 1.63$, $SD = .43$); $t(7) = 2.607$, $p = .0351$.

Table 2. Average Duration of Signs in Seconds

Participant	Familiar Condition	Unfamiliar Condition
P ₁	1.1	1.2
P ₂	1.3	2.0
P ₃	0.9	0.6
P ₄	0.6	1.3
P ₅	0.8	1.0
P ₆	0.8	1.1
P ₇	0.9	1.1
P ₈	0.6	1.1

Table 3. Average Number of Reiterations of Signs

Participant	Familiar Condition	Unfamiliar Condition
P1	1.4	1.5
P2	1.6	4.0
P3	1.2	1.3
P4	1.4	4.0
P5	1.7	2.1
P6	2.0	2.9
P7	2.0	2.4
P8	1.6	1.7

CONCLUSION

The conversational behaviors of the participants in this study were influenced by familiarity of the conversational partner in a predictable direction. Individual signs were longer in duration and reiterated more often in the familiar condition than in the unfamiliar

condition. Just as speakers adjust their speech to various conversational partners (Chishold & Pitcarn, 1998; Iwasaki & Hori, 2001; George & Krantz, 1981; Tomasello et al., 1984; Tye-Murray et al., 1994), the signers in this study adjusted their signs to the various partners. This study focused on two types of differences, speed and reiteration, which are part of the larger body of pragmatic devices used in register.

Duration of Sign

The mean duration of signs was significantly greater when participants were interacting with unfamiliar signing partners. Some participants produced signs up to two times longer when conversing with an unfamiliar than with a familiar partner. For example, P₄'s average duration of signs with a familiar was 0.6 sec, and with an unfamiliar it was 1.3 sec. Wilbur (2009) asked signers to recite a narrative at slow, medium or fast speed. The average sign duration was 0.66, 0.51, and 0.42 s respectively. In this study the average duration for unfamiliar was 1.2 s and for familiar was 0.88 s. The sign durations in this study were within the range of durations in Wilbur's study.

Listener's understanding and memory of speech is highly dependent on speech rate (Blau, 1990; Small, Kemper, & Lyons, 1997). Deterioration in speech comprehension occurs at around 200-250 words a min (Carver, 1973; Foulke, 1968; Griffiths, 1990). Deterioration in sign comprehension occurs at 2.5-3 times the normal signing rate (Fischer, Delhorne, & Reed, 1999). In Wilbur (2009) faster signing occurred with decreased sign duration and changes in pauses. Pauses were fewer and had decreased durations than in normal and slow signing conditions. Future analysis could explore length and number of pauses in face-to-face interactions such as the method used in this experiment.

Reiteration of Sign

Overall reiterations occurred significantly more often with unfamiliar than familiar partners. Some participants reiterated signs up to two times more often with unfamiliar than familiar partners. For example, P₂'s average reiteration of signs was 1.6 times in the familiar condition and 4 times in the unfamiliar condition.

Reiteration of a spoken word is one of the first learned conversational devices for children, and one of the last lost for adults (Johnstone, 1987). Speech is easier to understand when it includes reiteration of words (Fan, Yu, & Jiang, 2009). Reiteration increases comprehension in second language learning (Cabrera & Martinez, 2001; Weinstein-Shr, Cervantes, & Gainer, 1992; Pica, Young, & Doughty, 1987), and parents reiterate words to help with their child's language development (Keenan, 1975; Snow, 1972). Reiteration in speech increased comprehension in adults with Alzheimers (Small, Kemper, & Lyons 1997) and aids second language comprehension (Cabrera & Martinez, 2001). Therefore, reiteration makes communication more effective. Study of spontaneous oral narrative shows that reiteration is used to bring attention to certain themes and offer relevance to proceeding discourse for partners (Ochs, 1979; Shepherd, 1990). This may be especially true when conversing with an unfamiliar partner, and playing a game involving a deductive reasoning

structure. Reiterating signs may make the signs more comprehensible to an unfamiliar partner.

Speed of signs and reiteration are two communicative aspects that change register in conversations. Emmory, Gertsberg, Korpics, & Wright (2009) asked participants to vary signs production in experimental conditions. In one condition participants were instructed to “shout” and in another to sign informally (e.g., “sloppy”). In the normal condition they were instructed to use standard signing. Signers used a smaller signing space and signs were of shorter duration in the informal condition than in the shout or normal conditions. These finding support those of this study. Emmory et al. were able to vary register experimentally in artificial conditions. The current study created systematic natural conditions and also found decreased duration in one condition. Both informal and familiar conditions in these two studies produced decreased durations. Often speakers and signers use an informal register with familiar partners and this research support that.

Future research could explore other aspects of register such as pauses (Wierzbicka, 1985; Wilbur, 2009) and politeness markers (House & Kasper, 1981; Meyers, 1991). Politeness and addressing the partner with titles is more predominant when individuals are speaking with strangers than with familiars (Mills, 2003). For example, in English when greeting someone in a formal setting, it is proper to use the pronoun Mr. or Mrs. There also may be markers for politeness in signed languages with strangers. It is polite in deaf culture to make eye contact while communicating (Isreal, Cunningham, Thumann & Arnos, 1992). This could be studied systematically. There may longer eye contact between strangers meeting for the first time in comparison to close friends.

All participants of the current study lived in an assisted living center (CLALC). There are differences in communication of individuals that are community versus institutionally housed (Brinton & Fujiki, 1993); communication is limited in scope, variety, and quantity within institutional settings (Lubinski, Morrison, & Rigrodsky, 1981; McLean, Brady, & McLean, 1999). Daily social activities also are affected by living condition. When compared to individuals living independently with similar mental and physical impairments, residents of assisted living facilities engage in significantly more community activities because they are easily available to them (Mausbach, Depp, Cardenas, Jeste, & Patterson, 2008). There is a sense of community that occurs within the facility; therefore, it may affect the way that individuals communicate with strangers. An area of future research may be comparing responses and sociality of community versus institutionally based individuals under the same conversational conditions.

This research provides evidence for pragmatic aspects of ASL. This study shows differences in sign register with different partners and adds to an area of research that deserves further investigation. These discoveries are only possible with the study of face-to-face interactions (Pickering & Garrod, 2004). Though this study is the first of its kind to be conducted within a deaf human population, its results are important in emphasizing the parallel between signed and spoken languages in terms of different factors that influence the way in which an individual adjusts to the partner.

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Chapter 14

USING WRITTEN ENGLISH IN THE AMERICAN SIGN LANGUAGE CLASSROOM

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ABSTRACT

In the field of American Sign Language (ASL) pedagogy, the most popular teaching method seems to be the Direct Experience Method (DEM) (Newell, Mallery, Menkis, Holcomb, & Arthur, 1980). DEM encourages teachers to use ASL with the support of pictures, mime-pantomime, objects, and/or scenarios to teach vocabulary, language structure, and concept rules. Advocates of DEM discourage using English as a learning tool in the classroom. Studies in the field of second-language acquisition (SLA) show mixed results; some claim that only the target language should be used in the classroom while others argue that some use of the first language (L1) in the second language (L2) classroom helps students learn better (Cook, 2001; Van Lier, 2000). This study compared DEM with a modified DEM that includes written English as a learning tool to see which approach is more effective. The results suggested that the participants taught through DEM with written English support outperform those who are taught strictly with DEM and no written English. This study can help teachers understand the potential benefits of using minimal amounts of a student's native language in L2 classrooms. Limitations and recommendations for future studies are also highlighted in this chapter.

INTRODUCTION

Teaching and learning American Sign Language (ASL) as a second language (L2) has become very popular within the past couple of decades throughout the United States and parts

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of Canada. In 2015, the Modern Language Association reported that ASL is now the third most studied L2 at colleges and universities in the United States (MLA, 2015). Public high schools offer ASL as a second language (Rosen, 2008). Students enroll in ASL classes for different reasons. Some are interested in becoming ASL-English Interpreters (Peterson, 2009), teachers of the Deaf, social workers, speech-language therapists, or audiologists (Quinto-Pozos, 2005). Some students take ASL to satisfy a foreign language requirement, and others are simply intrigued with ASL and want to learn to communicate with the North American Deaf community.

Clearly, the ASL field is growing rapidly, particularly for L2 teaching and learning. Even with the growth of ASL teacher training programs, courses offered in ASL, and ASL teachers working in the field, not much is known about the acquisition of ASL as an L2. There has not been much dialogue between ASL researchers and educators, and teachers of other foreign languages (Quinto-Pozos, 2005). Second language acquisition (SLA) theory and research have focused on the acquisition of spoken and written languages, paying little, if any, attention to sign languages. Engaging in research concerning ASL as an L2 is especially challenging because of the few ASL tenured and tenure-track positions available in American higher education (Quinto-Pozos, 2005). Most ASL teachers are practitioners, and are not trained to conduct ASL research. Research related to sign language is mostly on interpreting, linguistics, and Deaf education. There are only a few ASL studies that focus on the effectiveness of teaching methods and strategies for L2 learners (Bussion, 2007; Radford, 2012; Rosen, 2015).

For many years, teachers and scholars have debated the best method for teaching students the grammatical structures of an L2 (Cook, 2001; Ellis, 2006). One of the more common teaching methods, the Direct Method (Richards & Rodgers, 2014), advocates the use of only the target language to teach grammar rules inductively. However, the most recent teaching methods seem to support using minimal amounts of a student's first language (L1). In other words, it is acceptable to use some native language as a learning tool to teach L2 grammar (Cook, 2001; Turnbull, 2001). SLA literature shows mixed results; some studies claim that, in the L2 classroom, the target language should be used exclusively, while others argue that discretionary use of the native language will help students learn better (Cook, 2001; Turnbull, 2001).

Currently, in the field of ASL pedagogy, the most popular method is the Direct Experience Method (DEM) (Newell, Mallery, Menkins, Holcomb, & Arthur, 1980), which is very similar to the Direct Method (DM) approach. DEM encourages teachers to use pictures, mime-pantomime, real objects, and/or scenarios to teach vocabulary, language structure, and concept rules. Advocates of DEM disapprove of using English as a medium of instruction in the classroom, (Quinto-Pozos, 2011) with no strong empirical evidence regarding the effectiveness of the method (Rosen, 2010). Instead, instruction seems to be influenced by the teacher's intuition and cultural beliefs.

The American Council on the Teaching of Foreign Languages (ACTFL) released a position statement encouraging language teachers to use the target language 90 percent of the time (2010). There is a clear consensus that use of the native language, in this case English, is highly discouraged. However, SLA research has not empirically examined this belief. Clearly, research is necessary to examine teaching methods and strategies that help L2 learners learn ASL effectively.

Use of English in Language Teaching Methods: Some teaching methods and approaches support the use of a student's native language in the classroom, while others do not. For the purpose of this chapter, only two teaching methods will be discussed, the Grammar Translation Method and the Direct Experience Method. The earliest recognized teaching method is known as the Grammar Translation Method (Richards & Rodgers, 2014). This method was the most popular teaching method in the early 19th century. The Grammar Translation Method advocates for the use of the native language as a medium for instruction, where students engage in translation exercises, such as translating vocabulary and sentences from the target language back into their native language. Grammar is also taught deductively, where teachers purposefully teach grammar in isolation. Reading and writing are the main focus of this teaching method, with little to no attention given to improving learners' face-to-face communication skills. Richards and Rodgers (2014) criticized this method for its lack of attention to face-to-face communication.

Critics of the Grammar Translation Method developed their own teaching method which is known as the Direct Method in the early 20th century. (Some refer to this method as the Natural Method.) The Direct Method theorizes that teaching an L2 should be like learning an L1—a monolingual approach (Richards & Rodgers, 2014). The Direct Method discarded using students' native language in the classroom in favor of using only the target language as the medium of instruction. Advocates of this method teach grammar inductively. The ultimate goal is to focus on building communication through face-to-face interaction, spontaneous use of language, no use of translation, and little explicit attention to grammar rules. However, critics of this method argue that teachers often go to great lengths to avoid using the native language when students could learn more efficiently if the teachers used their native language to teach simple and brief concepts (Richards & Rodgers, 2014). Moreover, the Direct Method can be difficult to apply in a classroom setting due to class size and time limits.

Since the emergence of the Direct Method, most teaching methods encourage teachers to avoid using a student's native language. However, the most recent teaching methods allow cautious use of the L1 in the classroom. These include communicative language teaching approaches and task-based learning methods; however, the theoretical foundations of these methods do not provide clear examples of when the native language can or should be used (Cook, 2001). Except for the Grammar Translation Method, which has little to no support in current literature, most teaching methods discourage using the native language.

Research on the Use of Students' Native Language in the L2 Classroom: In the field of SLA, research studies suggest that there are some benefits to using the L1 as a bridge for students to learn an L2 (Cook, 2001). Two large-scale studies compared the Explicit Method and the Implicit Method to examine which method was more effective (Levin, 1972; Hammond, 1988). The first study was conducted in Sweden by Levin (1972), with grammatical explanations provided in L2 English in some cases and in L1 Swedish in others. The study found that adult learners in the Explicit Method group, where they were instructed on grammar functions using their L1, performed better than those who learned through the Implicit Method where L1 was not used. However, in another comparative study, Hammond (1988) found that those taught grammar inductively through the Natural Approach did better than those taught deductively using a modified Grammar Translation Method. There were some limitations to the above-mentioned studies, however. For example, Ellis (2012) identified some methodological weaknesses with comparative studies, including lack of control groups and no attention to student's learning styles. Also, some of the comparative

studies were taught by different teachers. Regardless of the limitations, the comparative studies provide some evidence that the L1 can be useful for learning an L2. (See Ellis, 2012 for review of comparative studies regarding teaching methods.)

Based on survey reports from teachers and students, using the L1 in the classroom contributes to the learning process in a variety of contexts (Tang, 2002); however, excessive use is not encouraged because students will become too dependent on translating the language into their L1 (Atkinson, 1987). Some studies have shown that starting with the L1 at the beginning of class provides a sense of security and validates the learners' experience, allowing them to express themselves (Schweers, 1999). Similar results have been reported in English as a Second Language (ESL) and English as a Foreign Language (EFL) classes among Chinese (Tang, 2002), Greek (Prodromou, 2002), Croatian (Duimovic, 2007), Spanish (Schweers, 1999), and Iranian (Nazary, 2008) students. Teachers may also use the L1 to explain grammar, give instructions, help students, and provide correction (Atkinson, 1987; Cook, 2001). Motivation is another reason why teachers may use the L1, such as helping struggling students understand complicated grammatical structures (Duff & Polio, 1990). Using the L1 can be more efficient than encouraging students to guess through visual materials (Cook, 2001). Moreover, using the L1 enables teachers to build better rapport with their students (Nation, 2003). Teachers may also use code-switching to clarify and check for a student's comprehension. It is clear that there are advantages to judiciously using a student's L1 to support L2 learning in the classroom.

There are a few studies that examined the use of English as a tool to effectively teach ASL (Bussion, 2007; Rosen, 2010). A study by Bussion investigated whether having ASL gloss helped beginners improve their ASL grammatical knowledge. The results showed that, not only did the students' ASL grammar improve, their English grammar improved as well. This may be a result of their comparing English with ASL, thus becoming more knowledgeable in both languages (Bussion 2007). Rosen, DeLouise, Boyle and Daley (2014) compared Voice-Off and Voice-On approaches in the classroom, and found that students in a Voice-Off ASL classroom did significantly better than students in a Voice-On classroom. However, a third experiment showed that students with learning disabilities did equally well in Voice-Off and Voice-On groups, depending on their visual and verbal abilities.

There is a widespread assumption that use of a student's L1 will interfere with their learning (Atkinson, 1987; Cook, 2001). Cook (2001) argues that scholars and practitioners need to reexamine this notion. Cook theorizes that L2 learners cannot be taught as if they are learning their first language. Adult language learners are beyond the critical period for language acquisition, and therefore they typically do not have the neural plasticity that allows effortless acquisition of language knowledge and structure due to incidental exposure to the target language. Cook also argues that the L2 brain is an interlanguage brain, and there are not two separate compartments for the grammar systems of both languages. Instead, both languages are interwoven in the L2 learner's mind. The meanings of words in the L2 do not exist separately from meanings in the L1. The L2 student has the capacity for code-switching, where both languages are simultaneously online. Following Cook's reasoning, in the case of ASL and English in the classroom, it is impossible to eliminate English entirely; the ASL learners are already critically examining ASL with their use of English in their minds.

Purpose: Despite evidence that using the L1 in the classroom can be effective in supporting second language acquisition, many studies claim that exclusive use of the L2 enhances a student's learning of the target language (Cook, 2001; Turnbull, 2001). More

research is needed to understand the effect of L1 use in the L2 language classroom. This chapter reports results of a study designed to examine whether using written English as a learning tool helps L2 ASL learners to acquire ASL effectively. We hypothesized that students who are taught through DEM with written English support would outperform those who were taught using DEM only.

This experiment compared two teaching methods for adult L2 learners who are at beginning levels of ASL ability. Participants were randomly assigned into two groups, and results from the two groups were compared. The control group (*ASL+Pictures*) watched a lesson taught using the Direct Experience Method (DEM) with no written English on any teaching materials. The treatment group (*ASL+English*) watched a lesson taught using DEM with written English as a learning tool. The study examined learners' ability to recognize the grammaticality of ASL "if-then," conditional, statements. As part of the study, a survey was administered to collect participants' opinions about using English as a learning tool both inside and outside of the classroom.

METHOD

Participants

A total of 52 ASL students participated in this study. The participants were full-time undergraduate students enrolled at Rochester Institute of Technology (RIT) and were paid for their participation. RIT includes the National Technical Institute for the Deaf (NTID) as one of its nine colleges, with approximately 1,200 deaf and hard-of-hearing students on campus. Consequently, hearing students are regularly exposed to ASL in classrooms, dorms, and clubs across the campus. Participants were all recruited from ASL courses at RIT offered through the College of Liberal Arts. All participants in the study identified as Hearing or Hard of Hearing, spoke English fluently, and were either currently taking Beginning ASL I, Beginning ASL II, Intermediate ASL I, or had taken these classes in the past. Participants ranged in age from 17 to 52 years ($M = 21.3$ years, $SD = 6.3$). Demographic information from the participant sample is displayed in Table 1.

Table 1. Demographics for D/HH and Hearing participants. (* $p < .05$)

Measure	Level	Group			
		ASL with English (N = 27)		ASL with Pictures (N = 25)	
		M	SD	M	SD
Age		21.3	6.3	21.6	5.2
		%	N	%	N
Gender	Men	48.2	13	28.0	7
	Women	51.9	14	72.0	18
		%	N	%	N
ASL Level*	Beginning I	33.3	9	16.0	4
	Beginning II	59.3	16	52.0	13
	Intermediate I	7.4	2	32.0	8

Instrumentations and Materials

To measure whether the treatment had an effect on participants' learning, the research team, consisting of ASL teachers and research assistants, developed a Grammaticality Judgment Test (GJT). Grammaticality judgment tasks are among the common instruments for assessing L2 learners' linguistic ability in second languages (Ellis, 1991). A GJT consists of both grammatical and ungrammatical sentences, and evaluates learners' knowledge of syntactic structures. For the purpose of this study, twenty ASL conditional sentences were created. Students had to choose whether the stimulus sentences they saw were grammatical or not. Ten of the sentences were grammatically correct whereas the other ten were incorrect. All 20 sentences had correct ASL word order, but the non-manual markers were altered for the incorrect sentences, thus making them grammatically incorrect. In the correct conditional sentences the signer raised his eyebrows and leaned his head forward while producing the conditional clause. Immediately after expressing the conditional clause, the signer returned to a typical facial expression. For the incorrect sentences in the GJT, the signer did not raise his eyebrows or lean forward during production of the conditional clause.

All sentences were signed by the same native male signer, an ASL teacher. The native signer was asked to record each statement three times with the supervision of a fluent ASL instructor who directed the recording session in a studio with proper lighting and background. The 20 sentences were embedded into one of two surveys created on SurveyMonkey, an online, cloud-based, survey development platform. The sentences were viewed by participants in random order.

To ensure the clarity of each sentence, a pilot study was conducted with five ASL-English interpreting students before finalizing the GJT. The five participants were asked to take the GJT and provide feedback on whether the sentences were clear to them. Based on the feedback received from the interpreting students, the research team modified a few sentences to enhance clarity.

Survey

Participants' opinions and attitudes on the use of English in the ASL classroom were also collected in a survey. The survey questions were modified versions of questions based on Al Sharaeai's (2012) surveys from her unpublished master's thesis. The first subsection of the opinion survey asked participants to rate how often they use English inside and outside of the ASL classroom using a Likert-scale (1 = *Never*, 4 = *Always*). The second subsection had ten statements asking participants' opinions about the use of English in the ASL classroom using similar Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The third subsection had ten statements, and asked for participants' opinions on teaching methods using another Likert scale (1 = *strongly disagree*, 5 = *strongly agree*).

Lessons

The experiment included two video lessons on conditional statements. A native ASL user, a Deaf female ASL teacher from NTID, recorded the two lectures and was compensated

for her time. The first lecture, designed for the *ASL+Pictures* group, used slides with pictures to teach conditional sentences through the Direct Experience Method. The second lecture, designed for the *ASL+English* group, used slides with pictures, written English, and ASL gloss explaining the conditional sentence structures. Both lessons were digitally recorded in a studio at RIT with proper lighting and background. The lessons were approximately two minutes long. Each video lesson had a split screen; the screen on the left showed the ASL instructor explaining the conditional structure, and the screen on the right contained PowerPoint slides of the lesson itself. The videos were uploaded to YouTube as unlisted and were inserted into SurveyMonkey.

Procedure

Prior to the experiment, each participant viewed a two-minute vocabulary video. Participants were required to watch the video and ascertain if they understood more than half of the vocabulary before they could join the experiment. This was done to ensure that participants would understand the vocabulary used in the GJT. Testing was conducted in an interpreting lab at RIT. Participants were recruited from classes and came individually to watch one of the two lessons and take the GJT. When the participants arrived at the interpreting lab, they were randomly assigned into one of the two groups and then began by completing a demographic questionnaire.

A pretest was administered to collect a baseline measure of the participants' knowledge and understanding of conditional statements. They were asked to sit and watch twenty sentences and respond whether the sentences were correct or incorrect. They also had the option to respond "I don't know."

After completing the pretest, both groups watched a short, two-minute lesson. After watching the lesson, participants took the posttest, comprised of the same 20 sentences as the pretest, but the video clips were in a different random order. Again, they had to decide whether the sentences they saw were signed correctly or incorrectly.

One to two weeks after taking the pretest and posttest, participants returned to take a delayed test and to complete a survey regarding their opinions and attitudes on the use of English in the ASL classroom. The delayed test consisted of the same 20 sentences in random order. The delayed test measured the ability of participants to retain the knowledge they had gained from the mini lesson taken during the first session.

RESULTS

Posttest minus pretest difference scores (Immediate Learning) and delayed test minus pretest difference scores (Delayed Learning) were computed for each participant to capture the improvement in grammaticality judgements over time. A goodness of fit test on the distribution of the Immediate Learning difference scores revealed that the distribution met the normality assumption for parametric group comparisons. However, a goodness of fit test on the distribution of the Delayed Learning difference scores indicated significant departure from normality (Shapiro-Wilk $W = .947$, $p = .0218$). Therefore, the Delayed Learning

difference scores were transposed to non-negative values by adding a constant of 10 difference points to all participants' scores, and then a log transformation was applied to normalize the distribution prior to performing group comparisons.

Group differences were analyzed using independent directional t-tests to determine whether the *ASL+English* group displayed significantly greater learning than the *ASL+Pictures* group. Because the distribution of initial ASL levels at the beginning of the experiment differed significantly between groups (Table 1), the t-tests were statistically adjusted to equate ASL level.

The *ASL+English* group had significantly higher improvement scores for immediate learning (adjusted mean difference = 1.67, SE = 1.03) than the *ASL+Pictures* group (adjusted mean difference = -.50, SE = 1.21), adjusted $t(48) = 2.10$, $p = .0207$, 1-tail. The *ASL+English* group had significantly higher improvement scores for delayed learning (adjusted log mean difference = 2.41, SE = .08 than the *ASL+Pictures* group (adjusted log mean difference = 2.24, SE = .10), adjusted $t(48) = 1.95$, $p = .0285$, 1-tail.

Figure 1 displays the improvement in immediate and delayed learning for the *ASL+English* group compared to the *ASL+Pictures* group as a percentage of their pre-learning baseline performance, after adjusting for group differences in ASL skill at the beginning of the experiment. That is, these results represent the percent improvement over pre-learning levels within each group, assuming that both groups had started their course work at the same level of ASL skill.

Their responses show that the participants prefer when there is some written English support in the classroom, and that they feel they learn better this way.

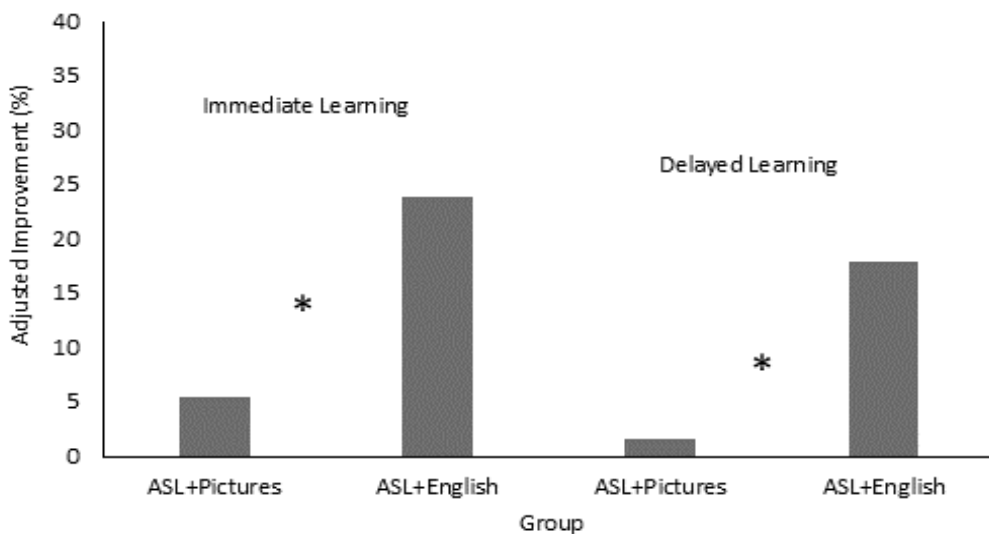


Figure 1. Comparison of two Teaching Methods (* $p < .05$).

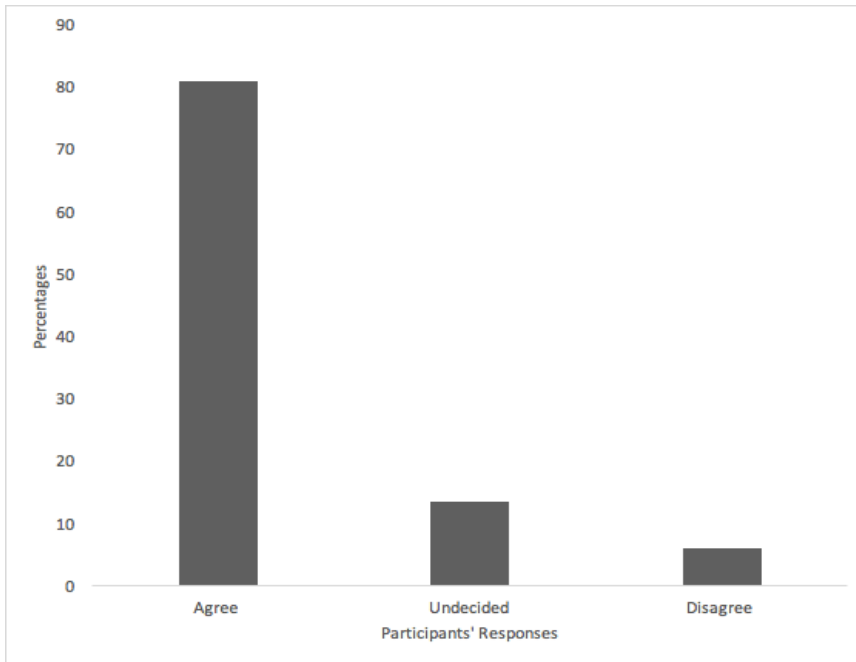


Figure 2. Displays the participants' responses to the survey question, "I learn better when the teacher uses both ASL and written English during instruction."

CONCLUSION

The results of this study indicate that using written English in the ASL classroom to explain grammatical structures improves L2 college students' ability to judge whether conditional sentences are correct or incorrect. The findings are consistent with students' responses to a self-report survey question, where students reported that they prefer when their instructor uses some English (L1) in the ASL classroom to support their learning. These results support previous literature that suggest judicious use of L1 in L2 classrooms will help L2 students learn better (Cook, 2001).

We recognize that this study focusing on English as a learning tool may cause discomfort among some Deaf ASL teachers who are not comfortable using English in the ASL classroom. We understand that using English in the ASL classroom is a sensitive and controversial topic, and we want to emphasize that this study only examined using written English as a learning tool to help students understand ASL concepts where they might otherwise struggle. Using spoken English or Signed Exact English in the classroom is not being promoted here. Nor do these results imply that Deaf ASL teachers must be fluent in English to teach ASL. The results of this study simply suggest judicious use of English can support L2 acquisition of ASL.

There are limitations to this study that must also be addressed. Although the results suggest use of L1 may help L2 students learn ASL better, this study did not examine participants' ASL production. The study only examined participants' ability to judge whether conditional sentences were grammatically correct or not. Future studies should examine other

grammatical structures. Additionally, future studies should investigate the influence of teaching methods on students' ASL production, ideally through a longitudinal study which would research the effect of teaching methods on L2 communicative and linguistic competence.

Regardless of the ongoing debate in SLA about preferred teaching methods, scholars recognize that one dominant teaching method cannot be applied to a wide range of learners (Brown, 2014). Instead, teachers are encouraged to use an eclectic approach, where they employ a variety of methods and adapt their teaching methods to optimize students' learning experiences. In other words, the idea of a one-size-fits-all teaching method is not practical, and teachers and scholars should reconsider the role of the L1 in the L2 classroom.

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VOLUME 2

Chapter 15

CHILDREN AS LITTLE LINGUISTS

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ABSTRACT

Language represents an intriguing and challenging topic, having fascinated mankind since its dawn. In the current study, our aim is to show the shortcomings of classical single-factor/unilateral theories of word learning, lexical acquisition, and language development, that generally tend to restrict these processes to single causes, constraints, factors or principles. Such theories imply a unilateral, linear growth pathway of language learning, acquisition, and development. Participants were 128 Moroccan children, 71 boys and 57 girls, aged between 4 and 12 years, all belonging to the social middle class. They lived in Taza city, capital of Taza province, a city in northern Morocco, 120 kilometers east of Fez, with a population of approximately 300,000 citizens, and surrounded by the Rif and Middle Atlas mountains. They were exposed to the two tasks, namely to the task of distinguishing between the appearance and the reality of a word and to the "False Belief Task on Word-Concept". We borrowed both tasks from the theory of mind and tried to adapt them to the field of linguistics, aiming at discovering the child's ability to distinguish between the *signifier* as an acoustic-linguistic reality, the *signified* as a mental entity and the *reference* as a physical/material entity. Findings of the current study support the pluralistic mentalist word theory.

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1. THE DIFFERENT CONCEPTUAL FRAMEWORKS CONCERNING LANGUAGE/META-LANGUAGE ACQUISITION AND DEVELOPMENT AND THE MAIN GOALS OF THE PRESENT STUDY

Language represents an intriguing and challenging topic, having fascinated mankind since its dawn. In order to dissect this mystery, the Egyptian pharaoh Psamtik I, the Holy Roman Emperor Frederick II and the King James IV of Scotland carried out a “forbidden experiment,” namely the so-called “language deprivation experiment”, in which they isolated a sample of children and raised them with no human interaction, in order to verify to which language the first words would belong.

In the current study, our aim is to show the shortcomings and drawbacks of classical single-factor or unilateral theories of word learning, lexical acquisition, and language development, that generally tend to restrict these processes to single causes, perceptual/cognitive constraints (namely, reference, mutual exclusivity, shape, “whole object assumption” and “taxonomic assumption”), social factors or principles (such as innate forces, parent-child interaction, cultural scaffolding, self-construction, relevance, salience or the “dumb attentional mechanism”, among others).

Such theories, like the cognitive heuristic, the social-pragmatic or the associationistic conceptual frameworks, imply a unilateral, linear growth pathway of word learning, lexical acquisition, and language development, which is the same for all children worldwide.

For example, according to associationism, as stated by Paul Bloom (2006), “if two thoughts occur at the same time, they become associated, and one gives rise to the other. Children learn the meaning of rabbit, then, because the word is used when they are observing or thinking about rabbits. As a result, the words and the thoughts become associated, and children could be said to have learned what the word means”. Ellen Markman, while working on 4-years-old children, showed that taxonomic constraint could be a major driver in language acquisition and development (Carey & Markman, 1999).

However, these theories fail to explain language acquisition and development in “real-world” contexts and situations.

In order to overcome these limitations, we have adopted a different approach, namely the pluralistic paradigm called the “emergentist coalition model” (ECM; Hollich, Hirsh-Pasek & Golinkoff, 2000; Hirsh-Pasek, Golinkoff, Hennon & Maguire, 2004). According to this theory, multiple, differentially weighted factors, interacting in complex, non-linear ways, may contribute to word learning, lexical acquisition, and language development, as well as to the formation of the mentalist word theory. In particular, this approach is characterized, both in its formation and its functioning, by various types of variability, observable at different levels (namely, inter-individual, intra-individual, inter-contextual and cross-cultural).

Hence, the mentalist word theory is not governed by a linear pathway and a straight trajectory, but is represented by a highly dynamic and complex process. Thanks to multiple, co-occurring cues, children would, first, acquire word learning principles, which are supposed

to guide the following processes of lexical acquisition, vocabulary building and language development. These different steps also reflect specific developmental phases: for example, during infancy, attentional mechanisms could drive the process of mapping labels to “non-boring” objects, whilst, subsequently, in 10-month-old children the principle of “conceptual saliency” could prevail, and in 18-month-old children social cues, such as eye gaze and object handling, could guide the cognitive processes (Hollich, Hirsh-Pasek & Golinkoff, 2000; Hirsh-Pasek, Golinkoff, Hennon & Maguire, 2004).

In particular, our research questions were:

- 1) To which extent is the growth of the mentalist word theory in accordance with the principles of the pluralistic paradigm and, more specifically, in line with the multi-variability principle?
- 2) Which are the factors that may contribute to the acquisition, formation, development and refinement of the mentalist word theory?

2. WHAT IS A MENTALIST WORD THEORY

The concept of a mentalist word theory emerges from various modern psycho-cognitive approaches which underline that the young child, even before attending the school, is capable of building naïve (folk) theories about his/her own self and the world surrounding him/her. These theories enable him/her to understand and explain various phenomena, including complex ones. In other words, the child sometimes behaves like a novice scientist, reflecting upon himself/herself and the rest of the world.

He/she builds such theories on specific mental domains which deal with different phenomena occurring within his/her environment (Melot, 1997). Thus, he/she constructs naïve theories in physics (Spelke, Vishton & Hofsten, 1995), in biology (Gutheil, Vera & Keil, 1998) and also in psychology (Flavell, 2001).

Here in the current study, however, we will attempt to uncover another type of naïve theories: the child’s naïve linguistic theory. It is worth noting here that our understanding of the naïve linguistic theory has nothing to do with the Chomsky’s concept. Rather, it is based on various concepts within the theory of theories or the meta-theory or the theory of mind. Our definition of the above-mentioned concept is then dependent on the answer to this central question:

To what extent is the child at a certain age able to distance himself/herself in a conscious and neutral manner from language as a topic for reflection far away from day uses, or, in other words, to what extent is the child able to behave the way the linguistic researcher does?

Since language is a vast domain, we will limit ourselves to a relatively small component of it: namely, the word. We will attempt to investigate how the child formulates his/her mentalist word theory.

First point: what do we mean by a mentalist word theory?

We could explain this concept, starting from the definition of meta-semantics. When we talk about meta-semantic related activities, we refer to a person’s awareness and consciousness of the arbitrary relationship between a word and its reference. In other words,

meta-semantics is the part of a meta-language that deals with semantics. Some scholars define meta-semantics as the philosophy or the metaphysics of semantics.

To be more specific, referring to the three definitions of meta-semantics given by the researchers Alexis Burgess and Brett Sherman (2014), for meta-semantics we do not mean the basic meta-semantics (which aims to describe the grounds or metaphysical bases of semantic facts) or the metaphysics of semantic values (which deals with issues such as how semantic values should be thought of), but rather the theory of meaning (which explains or tries to explain the nature or essence of the semantics). As such, meta-semantics, dealing with analyzing and relating different concepts, aims to build a conceptual space within which semantic theories can be thought, formulated and developed.

The mentalist word theory, as we mean it, is a concept larger than the mere meta-semantic related dimension/activity. Indeed, a person's mental activity in forming and developing his/her mentalist word theory is not limited to self-representation and self-awareness of the kinds of the arbitrary relationship between a word and its reference, but includes also his/her ability to make representations of his/her own representations, comparing these representations with those expected to be formulated by other people. In other words, for mentalist word theory, we mean that ability to create meta-representations of one's own representations, in order to check one's own and others' understanding of the arbitrary relationship between a word and its reference. In more precise words, the mentalist word theory includes the skill to check to what extent oneself is capable of judging his/her own and others' beliefs about the word.

In order to discover the child's mentalist word theory, we used these two tasks:

The first is the task of distinguishing between the appearance and the reality of a word, and the second is the task of evaluating the child's capacity and ability to detect false beliefs about the word-concept.

We borrowed both tasks from the theory of mind and tried to adapt them to the field of linguistics, aiming at discovering the child's ability to distinguish between the *signifier* as an acoustic-linguistic reality, the *signified* as a mental entity and the *reference* as a physical/material entity.

The first task, then, aimed at measuring the extent to which a child is capable of distinguishing the word as a linguistic reality from the non-word as a mere linguistic phenomenon which does not refer to any linguistic reality.

The second task aimed at looking closely at the child's ability to understand others' perception of the relationship between a word and its reference.

3. THEORETICAL REFERENCES AND METHODOLOGICAL COMPONENTS

3.1. Theoretical References

Viewing the mentalist word theory from a coalition-pluralistic angle/ECM perspective requires us to first introduce the main characteristics and principles of the pluralistic paradigm, and second to briefly review the extant literature related to the pluralistic-coalition

approach advocated by the theory of theories in general and the mentalist word-theory in particular.

3.1.1. The Characteristics, Principles, and Stakes of the Pluralistic Paradigm

The main challenge for the pluralistic paradigm of the ECM is to overcome the shortcomings that plague and limit single-factor theories and unilateral models in explaining the growth and functioning of knowledge.

In the current study, when we speak of unilateral conceptual frameworks, we specifically refer to Jean Piaget's developmental stage theory, as well as to the Neo-Pagetian theories further developed and refined by his disciples (namely, Juan Pascual-Leone, Robbie Case, Graeme S. Halford, Kurt W. Fischer and Michael Commons, among others). It is well known that these unilateral approaches have dealt with the self from an epistemological viewpoint. In their conceptual frameworks, this self is characterized by stereotypes both in its growth and functioning that take the form of general rules (whole structures, hierarchical integration, and growth subordination, among others), which evolve in a linear, steady and increasingly growing pathway pertaining all cognitive domains and for all children worldwide, with no subject- and culture-related differences and nuances.

On the contrary, proponents of the pluralistic paradigm have stressed that the self is a psychologically complex, multi-faceted and variable concept; whose growth and development are characterized by various degrees and types of variability (as already mentioned, inter-individual, intra-individual, inter-contextual and cross-cultural variability) (Troade & Martinot, 2001).

The knowledge-building mechanisms of this self are also varied in that they are not limited to coordination or integration as Piaget believed, rather they extend to incorporate also impoverishing processes that continually disqualify a competence for a better one.

Hence, we can divide the knowledge-building mechanisms into two groups: the group of disqualification mechanisms and the group of enrichment mechanisms, as proposed by Mounoud (1990).

The set of impoverishing mechanisms deals with inhibiting one skill and keeping another active and well functioning (Houde, 1999; Houdé & Guichart, 2001). Other important differential mechanisms are given by the operations of interaction and of vicariance between processes; that is to say the skill of substituting and replacing one process with another fulfilling the same function, according to a given context or situation (Reuchlin, 1978; De Ribaupierre, 2005).

These principles stem from the more general principle of "cognitive redundancy". We can, also, include in this category of processes the operation of modularization which enables to distinguish a cognitive structure from another by making it more refined and specialized (Karmiloff-Smith, 1998; Fisher & Yan, 2002).

Whereas the group of enrichment mechanisms includes: i) the operation of bridging between different cognition domains (Demetriou & Kazi, 2001), or between various skills (Granott, Fischer & Parziale, 2002), ii) the processes of coalition that seek to create a conceptual change by integrating two different cognitive domains until they take the form of a new domain (Carey, 1985), and iii) the processes of representational re-description (Karmiloff-Smith, 1992) which aim at optimising a communication between all cognitive domains, by transforming implicit knowledge of each domain into an explicitly coded, formal knowledge.

These mechanisms can guarantee some kind of synergy and interaction between the cognitive processes of our knowledge system (Lautrey, 2003). Moreover, in an advanced level of growth, this dynamic synergy between processes may contribute to the foundation of a conscious knowledge that can take the form of a meta-concept (Carey, 1991) or of a hyper-cognitive domain, together with self-awareness and self-regulation (Demetriou, 1998).

Since the pluralistic conception within the ECM stresses that the growth of cognitive mind is based on varied patterns of unevenness, varied mechanisms of functioning and flexibility of its cognitive systems, it will not restrict itself to a linear, progressive and steady pathway only, but would rather be as varied as the variegation of cognitive domains and the diversification of forms of variability affecting the cognitive mind.

Hence, the growth of knowledge will oscillate between recession and regression in one area and progression and stability in another. Thus, the multiple pathways of growth are like a spider's web or a network (Fischer, Yan & Stewart, 2002).

3.1.2. The Pluralistic Approach of the Theory of Theories

Many modern researchers have tried to approach the theory of theories with a pluralistic view that is characterized by the principles that we have briefly explained in the previous paragraphs.

To be concise, these authors took a fairly critical stand towards a number of unilateral Piagetian concepts, such as the principles of whole structures and hierarchical growth (Fischer & Immordino-Yang, 2002). Moreover, they also refused to consider the small child, in the early years of his/her life, as an empty vessel or as a mere sensory-motor being, but rather they viewed him/her as a pluralistic subject capable of producing advanced, symbolic knowledge. They also abandoned the idea of dividing growth into stages of unilateral knowledge and, instead, asserted that this growth is characterized by different levels of varied domains of knowledge (Karmiloff-Smith, 1997; Mounoud, 2000).

They also challenged the Fodor's principle of modularity of mind and modular system of knowledge since this conceptual framework claims that knowledge functions according to a hierarchical, inevitable and stereotypical way (bottom-up), and that its modules are self-contained, independent and non-interactive.

Instead, they proposed a conceptual framework relying on dynamic systems whose style of treating knowledge varies according to the factors affecting it. Furthermore, they stressed that mental domains are not separate from each other but rather participate all together in an interactive way according to coalition relationships that end up formulating new specific domains. This would enable the mind to attain high levels of cognitive flexibility that sometimes take the form of meta-cognition (Karmiloff-Smith 1997; Carey 1985; Spelke, 2003; Vosniadou, 2007).

Moreover, they called for reconciliation between the constructional, the innate, and the social theories by stressing that mental knowledge is not wholly innate but rather pseudo-innate, and, as such, while growing, it has to maintain an interactive relationship with the dynamic system of knowledge, on one hand, and the environment, on the other hand, so that it will develop and grow into mature knowledge.

According to this view, mental domains should not be considered as specialized from the very beginning but rather pseudo-specialized (relevant domains). It is only thanks to the continuing operation of distinguishing and modularizing that it comes to draw and re-draw their epistemological frontiers. This would occur according to the nature of interactions

between the dynamic system of knowledge, its innate constraints and the new inputs it gets from the surrounding environment (Karmiloff-Smith 1994; Carey & Spelke, 1994).

3.1.3. The Mentalist Word Theory and the Pluralistic Coalition Conception

We would like to notice that the nature of the theses that we discussed earlier are those in line with the main topic of this study. This is in the sense that they view the mentalist theory from two main perspectives:

The first perspective is pluralistic in the sense that the authors and researches that promote this conceptual framework admit that language, as the mentalist word theory or the acquisition of other processes, is subject to various kinds of variance such as: intra-individual variability (Bassono, 1998), inter-individual variability (Karmiloff-Smith, 1997), inter-contextual variability (Karmiloff-Smith, Grant, Sims, Jones & Cuckle, 1996) and inter-linguistic/intercultural variability (Gopnik & Choi, 1995).

Furthermore, the development of the mentalist word theory is not restricted to progressive and accumulative pathways only but is rather subject also to unsteadiness, collapse and mutation (Bassono, 1999). It, therefore, takes the form of an unpredictable scallop-like trajectory.

The second perspective is coalitional in the sense that the scholars stress that multiple factors intervene in the formulation of the child's mentalist word theory. One such factor is the innate factor in the form of specific principles that guide the child's acquisition of the word-concept and his/her development of a theory hereupon (Hollich et al., 2000).

The socio-cognitive theory claims that language acquisition and development is driven by socio-cognitive factors, that can be demonstrated in the fruitful cooperation between the adult and the child learning a language (Carpenter, Nagell & Tomasello, 1998). Constructive factors include two distinct dynamics.

The first dynamics is characterized by complex, subtle modularising/specializing/discriminating processes and events whose role and activities result into the transformation of the domain of language from a vague domain (relevant domain) into a domain with well-defined concepts and with distinct epistemological characteristics (Carey, 1991).

The second dynamics is cooperative, meaning that the domain of language is not isolated from other cognitive domains but is rather open, interacting and cooperating with them, and this occurs through importing many cognitive processes that are of considerable help in its construction (Spelke, 2003).

3.2. Methodological Components

3.2.1. Hypotheses

The main working hypotheses that we formulated were:

- 1) The development of the mentalist word theory is mainly governed by the multi-variability principle.
- 2) Various and different factors intervene in the acquisition and subsequent development of the mentalist word theory.

3.2.2. Participants

Participants were 128 Moroccan children, 71 boys and 57 girls, aged between 4 and 12 years, all belonging to the social middle class. They lived in Taza city (in Arabic language: تازة), capital of Taza province, a city in northern Morocco, 120 kilometers east of Fez, with a population of approximately 300,000 citizens, and surrounded by the Rif and Middle Atlas mountains.

We randomly chose the population from two schools (namely, the “Petit Prince” kindergarten and school, and the “Fatima Al Fehria” school for elementary education). We concentrated specifically on children whose ages were in line with the legal ages set forth for education levels. Hence, the variable of education and age were integrated in one single variable, that is to say the schooling/age variable. Thus, we used the same symbol to refer to both variables (Table 1).

3.2.3. Experiment

This experiment was made up of two tasks that were in their turns divided into several items.

Table 1. Distribution of the population according to schooling/age variable

Education levels	2 nd Year	3 rd Year	1 st Year	2 nd Year	3 rd Year	4 th Year	5 th Year	6 th year
	Kindergarten		Primary school					
Mean age	4.2 years	5.3 years	6.3 years	7.4 years	8.4 years	9.5 years	10.5 years	11.5 years
Total	16	16	16	16	16	16	16	16
Symbols referring to schooling /age grades	A	B	C	D	E	F	G	H

3.2.3.1. The Task of Distinguishing the Linguistic Appearance from the Linguistic Reality of a Word

The aim of this task was to assess the subject’s ability to differentiate between the word as a linguistic reality (that in addition to its phonetic structure has a semantic meaning and a reference in reality) from the non-word (which has no sense and no reference because it is not a real word in any language).

Task, Items and Procedures

Before administering the different tasks, we explained the main objectives of our investigation to the recruited subjects. We specified that we wanted them to distinguish between the word as a linguistic reality because it has a meaning and refers to an object in reality, and the non-word which, even though for its linguistic structure, could appear to be a word, is not a real, existing word, because it has no meaning and does not refer to any subject in reality.

We, then, presented the subjects with two words (namely, “/madrasa/” or “school”, an existing word in Arabic language and “dattaà” as a non-word) as two examples of what we meant with the concept of existing word and the concept of non-word.

Afterwards, we presented them with the following instructions: i) to say whether these utterances are words or just random clusters of sounds that appear to be like words but are not; and ii) to justify their given answer.

These instructions applied to the following four utterances:

First item: first utterance “/kalima/” (meaning “word” in Arabic language)

Correct answer: 1. Incorrect answer: 0.

Second item: second utterance “/sabsabsab/” (a non-word)

Correct answer: 1. Incorrect answer: 0.

Third item: third utterance “/rajol/” (meaning “man” in Arabic language).

Correct answer: 1. Incorrect answers: 0.

Fourth item: fourth utterance “/bibibibiq/” (a non-word).

Correct answer: 1. Incorrect answer: 0.

Overall scoring: the sum of the expected ideal and theoretical answers: 4/4.

3.2.3.2. The False Belief Task on the Word-Concept

The aim of this test which is made up of five items was to measure the subjects’ ability to evaluate the beliefs of others regarding the concept of the word, in other words, this test aimed at verifying the child’s ability in hypothesizing the others’ ability to distinguish between the word as a mental linguistic reality and its reference as a material, physical reality.

The items of the task take the form of scenarios characterized by a narrative nature with characters such as the teacher, the mother, the father and peers, and Alice in Wonderland. The aim was to create natural, engaging and motivating contexts so that the subject would easily interact with the task on one hand, and positioning himself/herself in indirect situations so as to discover his/her opinion of the others’ belief regarding the word-concept.

In this regard, we agree with Karmillof-Smith et al. (1996) in stressing that indirect procedures which rely on games or narration are more effective than direct procedures such as explicitly asking “What does this word mean?” or giving instructions like “Divide this sentence into words”.

Task Items, Instructions and Procedures

Item (1): the subject was presented with the following scenario and was asked to evaluate it. “I asked Ali, a child with your age: “What is the biggest word in this sentence: “/dahabtu maàa alasdiqae àala matni aIqitar¹/” (meaning “I went with friends by train”, in Arabic language)? Ali answered that the biggest word was “the train”. I asked him why and he said that the biggest word was the train “because the train is the longest means of transportation. I asked Lamia, a girl one year younger than you, the same question and she

¹ We use the symbols of the International Phonetic Association (IPA) in order to transcribe Arabic utterances.

said that “the train” was not the biggest word in the sentence but the correct answer was rather “friends” “because it is made up of a larger number of words than the other words in the sentence [“words” instead of “letters”]”. Who do you think is right? And why?”

Scoring: appropriate answer 2, incomplete answer 1, inappropriate answer 0.

Item (2): the subject was presented with the following scenario and was asked to evaluate it. “We asked your father this question: “What is the smallest word in this sentence: “/adoda qorba zzahra/” (meaning “The worm is near the rose”, in Arabic language)?” and he answered “the worm” “because it is a very small insect”. We also asked Mustafa, a student, the same question and he answered “/qorba/” (meaning “near”, in Arabic language) “because it has the smallest number of letters than the rest of the words in the sentence”. Who do you think is right? And why?”

Scoring: the same as previous item 1, that is to say appropriate answer 2, incomplete answer 1, inappropriate answer 0.

Item (3): the subject was presented with this scenario and was asked to evaluate it. “I asked your teacher to draw the word “ghost” (“/chabah/”, in Arabic language) and she gave me this (I presented him/her with a ghost picture). Then I asked your mother to draw the word “ghost”, but she answered that it is not possible to draw the word “ghost” “because the word can be read, written and uttered, but we can only draw a picture of a ghost, not a picture of the word “ghost”. As such, the task is not feasible”. In your view, was the teacher right? Or was your mother right? Can we draw the word “ghost”? How? Why?”

Scoring: the same as previous item 1, that is to say appropriate answer 2, incomplete answer 1, inappropriate answer 0.

Item (4): the subject was presented with the following scenario and was asked to evaluate it. “I asked your friend Osama to buy me a candy with the word “/dirham/” (which is a Moroccan currency, in Arabic language). He shouted at me and said that he could not buy a candy with the word “/dirham/”/ “because it is just a word”. Therefore, he asked me to give him a real “/dirham/” to buy a candy. Now, can you buy a candy with the word “/dirham/”? How? Why?”

Table 2. Symbols of the mentalist word theory-based experimental items

Tasks	Items	Symbols
The task of distinguishing between linguistic appearance and linguistic reality of a word	Item 1	Word
	Item 2	Sabs
	Item 3	Man
	Item 4	Bibib
	Overall scoring of items	OSI
False belief task on word concept	Item 1	Train
	Item 2	Worm
	Item 3	Ghost
	Item 4	Dirham
	Item 5	Alice
	Overall scoring of items	OSI

Scoring: the same as previous item 1, that is to say appropriate answer 2, incomplete answer 1, inappropriate answer 0.

Item (5): the subject was presented with the following scenario and was asked to evaluate it. “Alice travelled to Wonderland, a strange place, completely different from other places in the world; there, she found Humpty Dumpty who changed the dog’s name and called it “cat” and so the dog began to cry like a cat. He also changed the cat’s name and called it “dog” so it began to bark like a dog. All this happened in Wonderland. Do you think that this would be possible in our real world? Can we change animals’ cries and characteristics by changing their names? How? Why?”

Scoring: the same as previous item 1.

Overall scoring (OSI): The sum of the expected ideal theoretical answers ($2 \times 5 = 10$).

4. ANALYSIS, EXPLANATION AND DISCUSSION OF RESULTS

4.1. Analysis of Results

4.1.1. The Task of Discriminating Linguistic Reality from Linguistic Appearance

4.1.1.1. Effect of the Age/Schooling Factor on the Subjects’ Answers in the Task of Discriminating Linguistic Reality from Linguistic Appearance

Table 3. Means and percentages of correct answers in the task of discriminating linguistic reality from linguistic appearance, according to age/schooling variable

Schooling/ age	Word		Sabs		Man		Bibib		OSI	
	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean
A	68	0.68	87	0.87	81	0.81	81	0.81	79	3.18
B	93	0.93	100	1	100	1	100	1	98	3.93
C	93	0.93	100	1	100	1	100	1	98	3.93
D	93	0.93	93	0.93	100	1	100	1	96	3.87
E	100	1	100	1	100	1	100	1	100	4
F	100	1	100	1	100	1	100	1	100	4
G	100	1	100	1	100	1	100	1	100	4
H	100	1	100	1	100	1	100	1	100	4
All	93	0.93	97	0.97	97	0.97	97	0.97	96	3.86

Analysis of variance (ANOVA) revealed that the means of OSI varied significantly with the age factor ($F_{(7,120)}=6.18$, $P < 0.001$). Table 3, however, showed that the lowest value for correct answers recorded for the four-year-old subjects exceeded 70% with a mean of 3.18, while the eight-year-old group got the highest value of correct answers (100%) with a mean of 4. The five-year-old and the six-year-old groups got 98% with a mean of 3.93. This value decreased to 96% with a mean of 3.87 when considering the seven-year-old group.

This showed that there was no a clear pattern of sustained increase that started with a lower level and moved on to a higher one, as we found that about 79% of the lowest age group were capable of distinguishing between the linguistic reality of a word and its linguistic appearance (resemblance). Further, since the age of six years, the subjects’ answers seemed to

satisfy enough the required value of correct answers which was achieved at the age of eight years.

Although the subjects' answers to the "word" item varied significantly according to the age factor ($F_{(7, 120)}=3.42$, $P < 0.01$), we should notice that its lowest percentage exceeded the percentage of 60% for the youngest age group, while the five-, six- and seven-year-old groups scored 93%, with a mean of 0.93. These values were close to 100% (with a mean of 1), which was achieved by the groups of eight-year-old and older children (as can be seen in Table 3).

The mean values of correct answers to the items "man" and "bibib" varied significantly with age ("man" item: $F_{(7, 120)}=3.46$, $P < 0.01$; "bibib" item: $F_{(7, 120)}=3.46$, $P < 0.01$).

This variance, however, did not take the form of a sustained increase as six-year-old and older children reached the ideal percentage of 100% with a mean of 1. Subjects belonging to the four-year-old group approximated this value as they scored 81% with a mean of 0.4 in both items (as can be seen in Table 3).

Concerning the "bibib" item, we should notice that answers were not affected by the age factor ($F_{(7, 120)}=1.54$, not statistically significant), and this means that the mean values of correct answers for different age groups were quite close to each other with regards to this item.

4.1.1.2. The Effect of the Horizontal Comparison Factor on the Subjects' Answers to the Task of Distinguishing between Linguistic Reality and Linguistic Resemblance

Performing our experiment, we were able to observe that the difference in all subjects' answers to the items of the task of distinguishing between linguistic resemblance and linguistic reality of a word, was not statistically significant ($F_{(3, 360)}=2.26$, not statistically significant).

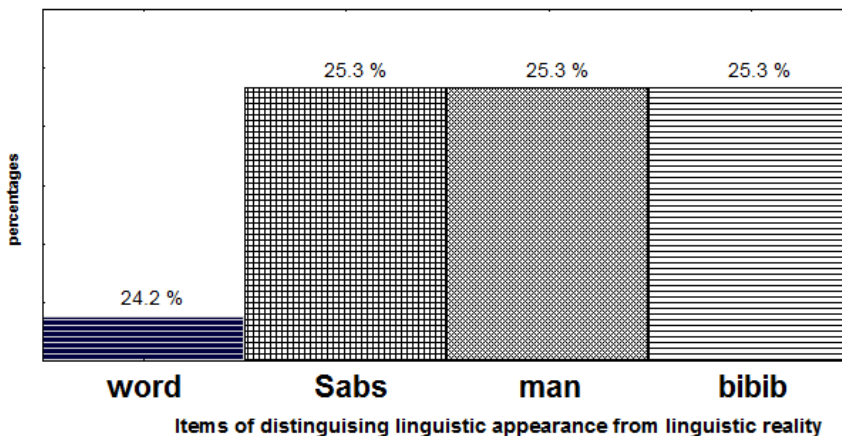


Diagram 1. Percentages of correct answers given by all population in replying to the items of task of distinguishing between linguistic appearance and linguistic reality.

This proves that task items, regardless of their being varied, did not affect the performance of the subjects in a statistically significant way. In other words, the number of correct answers of all subjects to the different items was relatively the same, in that the lowest value scored for the "word" item 93% with a mean of 0.93, whereas other items scored the

same value (that is to say, 97%) and the same mean value of 0.97 (as can be seen in Table 3 and in Diagram 1).

4.1.1.3. The Level of Interaction between Age and Horizontal Comparison Factors in the Task of Distinguishing between Linguistic Appearance and Linguistic Reality of the Word

The interaction between the age factor and the horizontal comparison factor appeared to be not significant ($F_{(21,360)}=0.67$, not statistically significant). This in turn shows some relative similarities between the growth pathways of subjects' answers to different task items (as can be seen in Diagram 2).

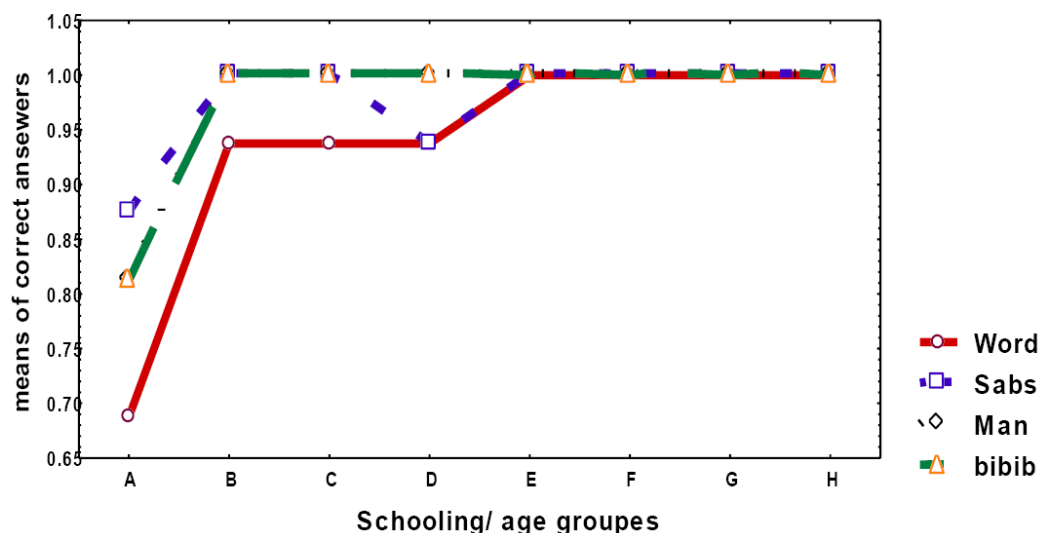


Diagram 2. The growth pathways of subjects' answers to different items of distinguishing between linguistic appearance and linguistic reality.

4.1.2. False Belief Task on Word-Concept

4.1.2.1. Effect of the Age-Schooling Factor on the Subjects' Answers to False Belief Task on Word-Concept

ANOVA unveiled that the mean values of OSF varied significantly through age evolution ($F_{(7,120)}=35.250$, $P < 0.001$). The extreme values related to four-year-old and eleven-year-old groups, respectively, which ranged between the mean of 2 and 10 (Table 5).

Insufficient answers to the "train" item were restricted to the four-year-old subjects with a percentage of 25% and to the five-year-old group with a percentage of 6%. Correct answers, however, covered different age groups, and they were situated between the percentage of 100%, obtained by the eight-year-old and the eleven-year-old groups, and the percentage of 12% observed in the five-year-old group.

Table 4. Percentages of correct answers and insufficient answers to the false belief task on word-concept

Items	Train		Worm		Ghost		Dirham		Alice	
Schooling/ age groups	Correct answers	Insufficient answers	Correct answers	Insufficient answers	Correct answers	Insufficient answers	Correct answers	Insufficient answers	Correct answers	Insufficient answers
A	12	25	25	6	0	6	18	0	25	0
B	37	6	31	6	18	18	69	0	63	6
C	81	0	75	0	45	0	63	0	75	6
D	94	0	94	6	81	0	75	0	94	6
E	100	0	100	0	69	0	94	6	100	0
F	94	0	100	0	69	0	100	0	100	0
G	94	0	94	0	100	0	94	0	100	0
H	100	0	100	0	100	0	100	0	100	0

Table 5. Means of correct answers and insufficient answers to the false belief task on word-concept

Items	Train	Worm	Ghost	Dirham	Alice	OSF
Schooling/ age groups	Mean	Mean	Mean	Mean	Mean	Mean
A	0.5	0.5	0.06	0.37	0.5	2
B	0.81	0.68	0.93	1.37	1.31	5.12
C	1.62	1.5	0.87	1.25	1.62	6.81
D	1.87	1.93	1.62	1.5	1.93	8.81
E	2	2	1.37	1.937	2	9.31
F	1.87	2	1.87	2	2	9.75
G	1.87	1.87	2	1.875	2	9.62
H	2	2	2	2	2	10

Generally speaking, what is noticeable is that the means of the “train” item also changed with age evolution ($F_{(7,120)}=15.691$, $P < 0.001$), as it was subject to a gradual increase that reached the highest level with the eight-year-old group, while slightly decreasing with the nine- and ten-year old groups and getting back with 11-year-old subjects to the same high level obtained by the 8-year-old group.

If insufficient answers to the “worm” item were given only by the 4-, 5- and 6-year-old groups with a marginal percentage of 6%, correct answers, however, covered all age groups, and ranged between 25%, observed for 4-year-old subjects, and 100% observed for the 8-, 9-, 11-year-old groups. Therefore, the means of the “worm” item increased significantly with age evolution ($F_{(7,120)}=17.651$, $P < 0.001$), in a linear trajectory, attaining the highest value with 8- and 9-year-old subjects, slightly declining with 10-year-old subjects and getting back with 11-year-old subjects to the same high value obtained by the 8- and 9-year-old groups.

Further, other points that should be noticed are the following ones:

- Insufficient answers to the “ghost” item were observed with four-year-old subjects with a percentage of 6% and with the five-year-old group with a

percentage of 18%. Whereas, except for four-year-old subjects, all other age groups scored correct answers with a percentage between 18% obtained by the five-year-old group, and 100% for the ten- and eleven-year-old groups. What is noticeable is that the mean values of the “ghost” item increased with age growth ($F_{(7,120)}=15.673$, $P < 0.001$) as they were subject to some fluctuations with a light increase between the age of four and nine years, and reaching the highest value at age of ten and eleven years (as can be seen in Table 4).

- Unsatisfactory answers to the “*dirham*” item were restricted to eight-year-old groups only. Whereas, all other age groups scored correct answers with a percentage of 18%, recorded for the four-year-old subjects, and 100%, reached by both nine- and eleven-year-old groups (as can be seen in Table 4). We also noticed that the mean values of the “*dirham*” item increased with age ($F_{(7,120)}=10.753$, $P < 0.001$) in an unsteady manner (effect shown in Diagram 5).
- Unsatisfactory answers to the Alice item were given by five- and six-year-old subjects with a percentage of 6%; whereas correct answers were scored by different age groups, ranging between 25%, recorded for four-year-old subjects, and 100%, reached by 8-, 9-, 10- and 11-year-old and older children. Overall, the mean values for the Alice item gradually increased as children grew older ($F_{(7,120)}=15.229$, $P < 0.001$); this increase reached its peak at the age of eight years.

4.1.2.2. Effect of the Horizontal-Comparison Factor on the Subjects’ Answers to False Belief Task on Word-Concept

Means of answers (considering the sum of both correct answers and unsatisfactory answers) of all subjects to the false belief task on word-concept varied from one item to the other ($F_{(4,480)}=6.125$, sign with $P < 0.001$), ranging from a percentage of 21.7% for the Alice item, to a percentage of 20.4% for the “train” item, to a percentage of 20.3% for the “worm” item, to a percentage of 20.0% for the “*dirham*” item, whereas the “ghost” item scored the least percentage (17.5%) (Figure 3).

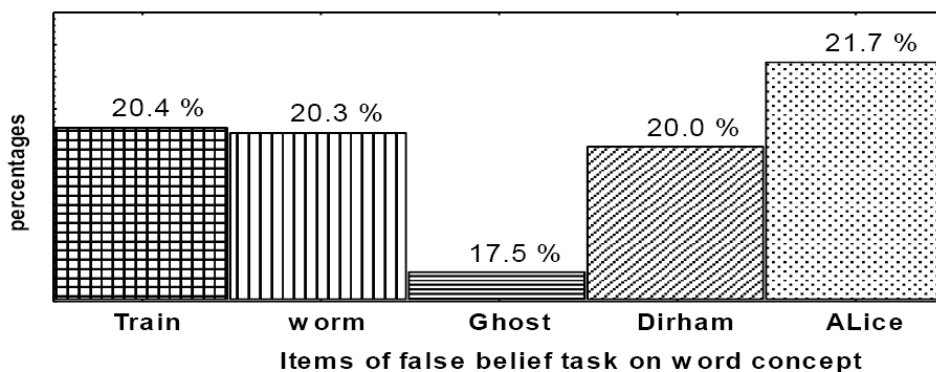


Diagram 3. Percentages of correct answers and insufficient answers given by all population in replying to the items of the false belief task on word-concept.

4.1.2.3. The Level of Interaction between Age Factor and Horizontal Comparison Factor in the False Belief Task on Word-Concept

The interaction between horizontal comparison and age was statistically significant ($F_{(28,360)}=1.836$, $P < 0.001$), which indicated that the growth pathways of the subject's answers to the items of the test of wrong belief were not uniform. However, we observed in Diagram 4 that they became uniform starting at the age of nine years, reaching a *plateau*.

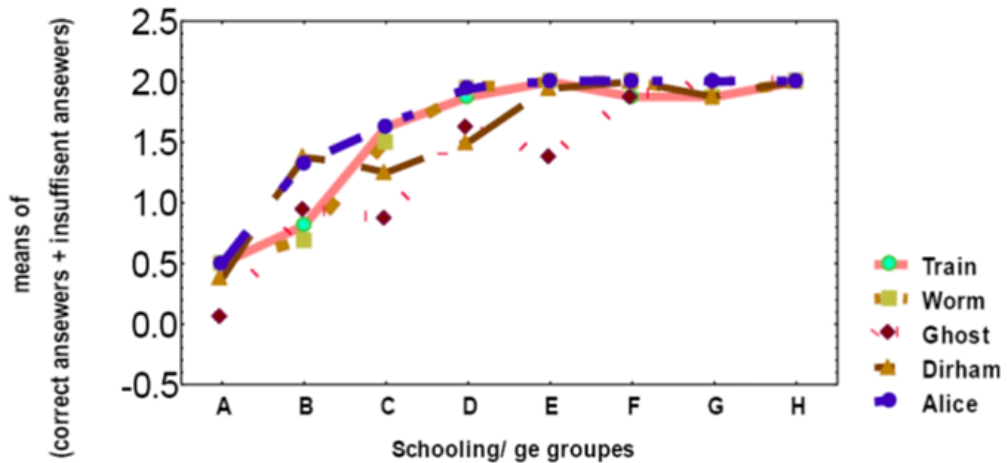


Diagram 4. The growth pathways of subjects' answers to different items of false belief task on word-concept.

4.2. Explanation of Results

To explain the data in the experiment related to the mentalist word theory, we should answer the following questions:

- What is the nature of the growth pathways of the mentalist word theory?
- To what extent could these pathways be termed “plural” or “pluralistic”?
- To what extent is the principle of “multi-variability” or “poly-variability” present in the dynamics of the evolution of the mentalist word theory and its functioning?
- How multiple are the factors that contribute to the development of the mentalist word theory?

4.2.1. The Development of the Mentalist Word-Theory

4.2.1.1. The Development of the Competence of Distinguishing between Linguistic Appearance and Linguistic Reality of the Word

Data from the task of distinguishing between linguistic appearance and linguistic reality of a given word revealed that the percentage of successful subjects' answers surpassed a percentage of 70% at the age of four years, and got closer to 100% at the age of five years. The percentage of 100% was reached since eight years of age.

Hence, there is not a linear and sustained growth pathway that starts with cognitive weakness and moves on to reach cognitive expertise, in that even very young children have a fair amount of such expertise.

The question is why and how are even four year old subjects able to distinguish between the linguistic reality of a word and its linguistic appearance? Is it because of schooling? Or are there other factors playing a major role?

It is evident that these children are newcomers to kindergarten and, as such, we believe that schooling is not a sufficient reason to explain their success in the task of distinguishing between linguistic reality of a word and its linguistic appearance. This, undoubtedly, means that the child comes to kindergarten with already-established beliefs and naïve hypotheses, and these enable him/her to pass the linguistic task so successfully.

Scholars like Hollich et al. (2000) and Carey and Markman (1999) have wondered how the child could acquire and develop language in such a short period of time; we, also, cannot avoid asking the same question in relation to the experiments we conducted.

More specifically, we wonder how the kindergarten pupils were so successful in the task of distinguishing between linguistic reality of a word and its linguistic appearance.

The reality is that the child may be pre-equipped with certain principles and constraints that guide him/her to understand the word-concept; we believe that these same principles and constraints are used by our subjects while dealing with the linguistic task, and these conceptual principles are as follows:

Reference principle: this appears at the pre-linguistic stage and it is manifested in the child's tendency to look closely at the subjects/things we name (Hollich et al., 2000). It appears that, in our experiment, four-year-old subjects tended to exploit this principle when they refused to consider the items “sabsab” and “bibibiq” as words as they have no reference in the real world. We should notice that over-generalizing the use of this principle may result in the fact that some subjects refused to consider the word “word” as a word as it has no real reference. They, indeed, explained that word is “not a word because we don't understand it; because it is not a thing”.

The Extendibility principle: this principle means the child's understanding since two years of age that the name is not an attribute of a specific subject/thing alone, but that it can refer to various subjects/things (Hollich et al., 2000). This reflects the fact the child has started to become aware of the nature of the arbitrary relationship between a word and its reference. Hence, we believe that the subjects of our experiment, especially the very young ones, that were successful in the “word” item task, relied on this principle: in that they believed that, as the word-concept refers to no specific material subject, it should be perceived and understood as extended, and that the names of all subjects are words. Thus, their justification was as follows: “the word is a word because we understand it; bread is a word, milk is a word, the table is a word, too”.

Object scope or whole object assumption principle: at an early age, the child formulates the belief that every name refers to the whole object and not just to some of its parts, components and attributes, and that it does not refer to events and actions (Hollich et al., 2000). We consider quite probable that the kindergarten pupil utilized this principle while dealing with the “man” item task as we got the following justifications: “man” is a word “because we name him man, because it is the name of a human being, because we use it to name the teacher and dad, for example”.

Conventionality principle: This is the child's attempt of getting rid of words that he/she (or someone else) invented, while embracing words that the family and society have agreed upon (Hollich et al., 2000). Hence, the subjects relied on this principle when they refused to consider the words “*sabsab*” and “*bibiq*” as words because for them no social convention or norm exists for these words. Thus, they formulated the following justification: “*bibiq*” is not a word “because we don’t hear it so often, “*bibiq*” is not a word because we don’t understand it, it is just a nonsense.”

The Novel name-nameless category: this principle has been recently reformulated by Hollich et al. (2000), It is known also as principle of mutual exclusivity (Markman, & Wachtel, 1988). This refers to the young child’s tendency to attach every invented name to a new still-nameless subject/object. We think that the supremacy of this principle over the child’s mentalist word theory leads him/her to consider a number of non-words as real words that refer to specific references. This is what we were able to deduce from justifications as these: “*sabsabsab*” is a word “because we name dogs “*sabsabsab*”. “*Bibibiq*” is a word because we hear “*bibibiq*” in the street”.

As such, it becomes clear that there are a number of specialized principles that guide the child in differentiating between linguistic appearance and linguistic reality of the word. For the recruited subjects, these principles may have helped to draw the frontiers of the domain of language and to lay the foundations of what we call the naïve linguistic theory.

Therefore, we conclude that even if the linguistic domain contains specific linguistic principles, it is not isolated from other cognitive domains, but is rather in interaction and in addition to the previous ideas.

For example, Melot (1999) stated that the child between the age of 4 years and of 5 years could be capable of discriminating the appearance of a thing from its reality. Still, what attracts much attention, according to our data, is the fact that the child is able of distinguishing between linguistic appearance of the word and its linguistic reality at such an early age.

Hence, we can ask the following question: why do these children succeed in the two tasks simultaneously?

We believe that the child at this age begins to understand that the mind can produce various and different representations about the same object (Melot, 2001). Subsequent to this is the emergence of the skill of distinguishing between mental entities (that is to say, beliefs, representations) and their corresponding material entities.

In our view, this is a general skill, belonging to the domain of the theory of mind, and it influences the child’s mentalist word theory, thus helping him/her to distinguish between the linguistic appearance of the word (non-word) and its reality (real word).

4.2.1.2. The Development of the Skill of Evaluating the False Belief Task on Word-Concept

Age evolution does certainly influence the advancement of the skill of differentiating between miss-representation of the word-concept and its appropriate representation. Whereas, the development of correct answers to the items of false belief task about word-concept is not always linear.

We observed, indeed, a wide diversity of development trajectories, which follow varied multi-step, progressive, regressive or stable pathways. For instance, we found that correct answers to the “ghost” item were stable for 8-9-year-old groups (69%). Nevertheless, 8-9-

year-old subjects were less successful in correctly answering to the “ghost” item task than the 7-year-old group which attained a higher percentage (81%). Further, we can notice some slight regress in the answers to the “train” item for 9-10-year-old subjects (94%) and the 8-year-old group (100%). Also, this could be noticed in analyzing and discussing the answers to the “worm” item for 10-year-old subjects (94%) as well as for the 8-9 year-old group (100%). Furthermore, we observed the same trend in the answers to the “*dirham*” item task for 6-year-old-subjects (63%), as well as for the 8-9- and 5-year-old groups (69%).

Hence, the trajectory of the skill of evaluating the false belief task on word-concept oscillates between stability and regression in one area and progression in another one. This leads us to describe it as pluralistic pathway.

We would like to notice, however, that when we stress the diversity of the rhythm of growth pathways formation and development for the skill of evaluating false belief on word-concept, we do not mean to reject the hypothesis that the mentalist word theory may evolve through constructive dynamics.

While reviewing subjects’ answers, we noticed clear differences between justifications given by kindergarten children and advanced students, in that ambiguous justifications were restricted to kindergarten children with an average of 12.5% but were practically non-existent for other school levels; such justifications were fully irrelevant and contained no clear causal connectors.

For example, we considered an irrelevant justification to the “worm” item, a reply like “I choose the flower because we can give it to someone as a gift” or “The worm is the smallest word because it can fly”. We considered an irrelevant justification to the “ghost” item an answer like “We do not draw the word “ghost”, we write it because it can be written easily”, or “We don’t draw the word “ghost” because it cries”.

What is noticeable, however, is that the majority of justifications, though classified as incorrect answers, were based on clear causal explanations. For example, in the case of the “train” item task, “The word “friends” is longer than the word “train” because we have many friends”, “The word “train” is longer because the train is very long”, or in the case of the “worm” item task “The “worm” word is the smallest word in the sentence because the worm is so small that it can go inside peas”. In the case of replies to the “*dirham*” item task, “With the word “*dirham*”, we can buy cakes”, or in the case of the Alice in Wonderland task, “It is possible because it was a dog, but when we gave it milk and called it pussy-cat it began to mew, and if we called it dog, it would have started to bark”.

Such answers revealed the existence of a causal-explanatory linguistic theory that still lacks the dimension of the arbitrary relationship between the word and its reference, as it considers the word a material attribute/ a characteristic inherent to the subject/object it refers to. Thus, it can be termed as a naïve theory.

However, if we know that the child, in the early years of his/her schooling, is highly likely to encounter the arbitrary relationship between the word and objects and to familiarize with such concept, it becomes obligatory to wonder about which strategy he/she uses to deal with this idea. Does he/she give up once and forever to his/her naïve theory together with his/her deeply rooted naïve linguistic beliefs and replace them with a serious, scientific linguistic theory? Does he/she stick, instead, to his/her first naïve theory at the expense of a more scientific one?

We should notice that the justifications provided by pupils at higher kindergarten levels and at the first level of elementary education indicated that they very often tried to combine

their naïve representations together with their school-learned scientific knowledge, and this lead them to formulate a mixed or rather synthetic theory.

This is, indeed, what can be inferred from the following justifications given to the “ghost” item: “We don’t draw the word “ghost”, we write it instead, because it’s very big and it’s difficult to draw; we don’t draw the word “ghost” because it would appear to us while drawing it”. To some extent, the child has begun to become aware of the stenographic and abstracting function of the word; as in the given explanation, transforming the ghost from a material object to an abstract entity so that it would not appear: “It is too big to be a word”.

The following example (the justification given to the “*Dirham*” item task) goes in the same direction: “We can buy nothing with the word “*dirham*”, because it’s just a word, and the word is just like a piece of paper; can we buy anything with a piece of paper? Can we buy something with nothing?”

Such a justification shows that the child has started to become aware of the fact that the word is an abstract entity but still is unable to declare it. This is so, because he/she is still not capable of getting rid of naïve beliefs altogether. Later on, and as a result of the influence of the schooling factor, on one hand, and the cognitive-maturity factors on the other hand, the child is convinced of the necessity of giving up to his/her complex, hybrid linguistic theory for embracing a scientific one.

This is, in fact, what the following justifications given to the “train” item task shows: “The word “*/asdiqae/*” (meaning “friends” in Arabic language) is the longest word in the given sentence because it contains many letters”.

Also the explanation given to the “worm” item seem to suggest a similar process: “The word “*/qorba/*” (meaning “near” in Arabic language) is the smallest word in the sentence because it contains just three letters”.

The same trend can be observed in the explanation given to the “*Dirham*” item (“No, because it’s just a word and not a real *dirham*”), in the case of the reply to the “ghost” item task (“It is not possible, because drawing is not like writing”) or in the answer to the Alice in Wonderland task (“Because the dog’s barking does not change even if we would change its name, the name is just a name, it has no impact on animals”).

Hence, the schooling factor plays a fundamental role in the development of the child’s mentalist word theory (higher kindergarten level and first level at elementary school).

In addition, the following answers further reinforce this fact: in the case of the “train” item “The word “*/asdiqae/*” (meaning “friends” in Arabic language) is the longest word in the given sentence, because it contains many words [instead of letters]” or “The word “train” is very long to write”. These justifications/explanations will, at advanced levels, be replaced by the following ones: “The word “*/asdiqae/*” (meaning “friends” in Arabic language) is a long word because it contains six letters”. This means that it is schooling that enables the child to differentiate between the concept of the letter and the concept of the word.

Overall, it can be said that the development of the child’s mentalist word-theory, which is a co-product of the schooling factor and the dynamics of internal construction, is realized through a set of gradual conceptual changes that move from a naïve theory to a synthetic one and are finally crowned with the establishment and development of a serious, scientific theory (Vosniadou, Skopeliti, I. & Ikospentaki, 2004).

It should be noticed that this conceptual change of the child’s mentalist word theory is subject to variability from one item to another. For instance, even if more than 60% of five-year-old subjects are able to provide correct answers to the “*Dirham*” item and to the Alice in

Wonderland task, we do not get such a satisfactory percentage for the item “/doda/” (meaning “worm” in Arabic language) and “/qitar/” (meaning “train” in Arabic language) in subjects with less than six years of age.

Concerning the replies to the item “/chabah/” (meaning “ghost” in Arabic language), the above-mentioned percentage is reached at eight years of age.

Hence, items’ development pathways are varied even if they have the same objective, which is to measure the subjects’ ability of evaluating a number of representations on the relationship between a word and its reference. This ability varies depending on the level of difficulty and complexity of each item; some are highly complex such as the item “/chabah/” (meaning “ghost” in Arabic language); others are less complex, such as the word “Dirham” item and the Alice in Wonderland task.

As such, the development of the mentalist word theory is not context-independent but rather context-dependent. In simple and easy situations (distinguishing between linguistic appearance and linguistic reality of a word, the “Dirham” item and the Alice in Wonderland task), the child is able to express and convey very advanced, sophisticated representations on word-concept at an early age.

However, in tricky and challenging situations or ambiguous contexts, it is necessary for the subject to be older in order to express appropriate conception of the word, as was, for example, stated by researchers like Fischer & Yan (2002).

4.2.2. The Mentalist Word Theory and the Multi-Variability Principle

If the multi-variability or poly-variability principle constitutes the principle tenet of the pluralist paradigm, the question is to what extent does this principle affect the child’s construction of a mentalist word theory?

In the following paragraphs we will focus on the different kinds of variability in order to give a serious reply to this crucial question.

A. The Multi-Variability Principle and the Task of Distinguishing between Linguistic Reality and Linguistic Resemblance of a Word

A.1. Inter-Individual Variability

In our experiments, we found that inter-individual differences were almost non-existent in the task of distinguishing between linguistic appearance and the linguistic reality of the word, since the majority of subjects reached the required maximum in answering this task, with the exception of four-year-old subjects.

As such, overall, there was a marginal presence of this kind of variability: namely, for the “word” item 68% were successful *versus* 32% unsuccessful, for the “Sabs” item, 87% successful *versus* 13% unsuccessful, for the “man” item 81% successful *versus* 19% unsuccessful; for the OSI 79% successful *versus* 21% unsuccessful.

A.2. Inter-Contextual Variability

Since horizontal comparison was found to have no impact on the subject’s answers to the test of discriminating linguistic appearance from linguistic reality, this reveals outstanding

similarities in their performances with regards to other task items. This leads to the eventual removal of inter-contextual variability.

A.3. Intra-Individual Variability

The reasoning formulated for the inter-contextual variability applies also the intra-individual variability.

A.4. Cross-Cultural Variability

We would first mention that it is really hard to draw any kind of cultural comparison between the present study and other Western studies since the nature of the items and the instructions used in our experiment have not been adopted in any of the previous researches. Therefore, this puts aside any kind of uniformity on the level of the experiment condition.

However, Baker's (1984) experiments resulted in the same conclusion that children between the ages of five and seven years do distinguish the word from the non-word.

Flavell, Speer, Green, August, (1981) concluded that four- and five-year-old children express their non-understanding of rare words. Such findings do further reinforce our hypothesis that the competence of distinguishing between linguistic reality and linguistic appearance is indeed a pre-school activity. We recorded that about 79% of four-year-old subjects performed well in the task of discriminating linguistic reality from linguistic appearance.

However, a study carried out by Bowey, Tunmer and Pratt (1984) demonstrated that the child can only discriminate the word from the sound after six years of age.

In the same context, Downing, (1969, 1970, 1972) performed several experiments in which five-year-old groups were presented with a number of sounds (natural, sounds, noise, phonemes, words and sentences) and were asked to say "yes" when they recognized a word in this chain of sounds. The outcome was that none of the subjects was successful in the task.

We believe that the main reason behind such differences and discrepancies between these findings and our result, is not related to the cultural variable but is rather mainly because of the nature of the tasks: their difficulty level and their degree of appropriateness to the child's mentality.

B. Multi-Variability Principle and the False Belief Task on Word-Concept

B.1. Inter-Individual Variability

Inter-individual differences in seven-year-old children and older groups remain marginal. Indeed, most subjects from the age of seven years on reach the maximum required value of correct answers in the task of the false belief on word-concept. There is, however, a significant inter-individual variability in all age groups younger than seven years.

B.2. Inter-Contextual Variability

The performance of the majority of subjects varies slightly from one item to another. For most items, correct answers fluctuate between 20% and 21%. We should notice, however, that the "ghost" item is a significant exception to this as subjects scored the lowest percentage (17%).

We believe this is so because the item is an inappropriate situation to the child and the reference is an abstract and imaginary entity (the ghost). Within the same context, De Villiers (1978) concluded that the child refuses to consider the “ghost” as a word because the ghost does not exist.

B.3. Intra-Individual Variability

More than 70% of the recruited subjects were successful in the task of discriminating linguistic appearance from linguistic reality since four years of age. However, we have to wait until six years of age to get acceptable percentages in the false belief task on word-concept. This means that most subjects were more successful in the first task than in the second task.

In other words, we can depict this kind of cognitive behavioural change for the same individuals from one situation to another as a sort of intra-individual variability.

B.4. Cross-Cultural Variability

Berthoud-Papandropoulou and Sinclair (1974)’s study is somewhat similar to our study especially concerning tasks and procedures. This study found out that the six-year-old child is incapable of comprehending the arbitrary relationship between a word and its reference, and only starts becoming aware of this relationship at the age of seven years. Before this age, when asked to give examples of long words he/she gives words that refer to long things (reference). He/she also considers the words “cigarette”, “box” and “worm” as short words because they refer to small subjects/objects. Although the seven-year-old child starts becoming aware of the independence of the word from its concept, he/she continues to refusing to consider conjunctions, pronouns and adverbial particles as words, because for him/her they do not refer to real references (that is to say, real subjects or real things) (Berthoud-Papandropoulou 1978, 1980).

Another study of Osherson and Markman (1975) concluded that five-year-old subjects refuse to substitute the word “sun” for the word “moon” because they believe the sky would not get any darker; these children also believe that changing the dog’s name and calling it “cat” makes it mew.

On the contrary, our study concludes that more than 70% of the six-year-old group were aware of the arbitrary relationship between the word and its reference; and more than 70% of these refused to consider the word “worm” as the smallest word in the sentence and tended to replace it with the word “near” (*/qorba*² in Arabic language), because it contained the least number of letters, regardless of the difficulties that this word could pose in that it does not refer to a concrete subject or thing but is rather a spatial adverbial particle.

Also, our data reveals that approximately 80% of subjects at 6 years of age could recognize that the biggest word in the sentence was not the word “train” but the word “friends”. As such, we are in accord with Bialystok (1986)’s experience when the researcher asked children between 5 and 6 years of age to determine the smallest and biggest word in a given list of words (“hippopotamus”, “train”, ...). The outcome was 67% of correct answers at 6 years of age *versus* 28% of correct answers given at 5 years of age.

² When we consulted an Arabic grammar book (“*jamia doros al arabiya*”, in Arabic language) on this point we found the following: the word “near” (in Arabic language, “*/qorba*”) is not considered as a spatial adverbial particle, meaning that in Arabic language it has no concrete representation that can be perceived.

In addition to what already said and discussed, more than 60% of five-year-old subjects in our study accepted the possibility of substituting the cat's name with dog with no impact whatsoever as to the animal's physical characteristics.

We should notice that the discrepancy between our data and the previously cited data is not only due to cultural differences but can rather be explained by the nature of the procedures used and opted for optimal contexts.

As a matter of fact, the items of the false belief task on word-concept were made up of dialogs with different characters (namely, the father, the mother, the teacher, Alice in Wonderland, Humpty-Dumpty, and pupils) and these added a playful, engaging dimension, making it easier for the child to better-express his/her meta-semantic activities at an early age.

However, the previously cited studies mostly used direct questions, like "What does this word mean to you?" and sometimes tricky, challenging or too sophisticated situations that exerted some sort of inhibition on the subject and did not allow him/her to express his/her mentalist word theory skills.

4.3. Discussion of Results

In discussing the results of this experiment, we will focus on the following points:

4.3.1. *The Pluralistic Characteristic of the Mentalist Word Theory*

According to Piaget (1926), the child becomes aware of the arbitrary relationship between the word and its reference through a linear, progressive and sustained growth pathway. Until six years of age the child considers the word as being an intrinsic attribute of the subjects/objects it refers to (the "sun" is called "sun" because we can see it or because it is hot); between seven and eight years of age the child believes that God or a God-like creature creates things with their names, at nine years of age he/she starts to consider the word as a result of social convention, and only deals with it as a symbol when he/she reaches ten years of age.

The growth of semantic awareness for Piaget depends on the general cognitive growth. Indeed, he claimed that the various cognitive domains (namely, serial arrangement, conservation, inclusion, and semantic awareness) are, on one hand, subject to the principle of whole structures that force it to follow the same growth-pathway; and, on the other hand, they are governed by a quite standardized operation of hierarchical integration. In that, each level of linguistic awareness has to incorporate the preceding level and extend further. This operation takes the form of hierarchical, substituting phases, and standard, invariable organization that governs the cognitive development of all children. In addition, it is guided by the principle of subordination, meaning that the development of semantic awareness is subordinated to operational structures.

It is worth mentioning that a number of psycholinguistic scholars adopted the Piagetian unilateral approach in dealing with semantic awareness. Such researchers were: Herriman (1986), who stressed that linguistic awareness is subject to operational structures; Smith (1979) who stated that the emergence of semantic awareness is dependent on the child's ability to accessing the stage of formal operations. Similarly, many studies tried to prove the existence of whole structures through revealing the significant correlation between child's

success in some Piagetian tasks (namely, inclusion, serial arrangement, and conservation, among others) and progress in semantic awareness (Hakes, 1980; Tunmer & Fletcher, 1981).

Flavell (1978) was also influenced by this Piagetian view and stressed that both operational thinking and linguistic awareness were expression of a general change undergone by the cognitive system, represented by the formation of the meta-cognitive domain.

Berthoud-Papandropolou (1980) challenged some Piagetian concepts in that this researcher claimed that the meta-linguistic growth is not part of the growth of logical structures, and cannot be included within whole structures, believing that there is some sort of parallelism between the meta-linguistic pathway and the logical-mathematical pathway. As such, the development of the child's word-concept is likely to interact with the formation of such cognitive skills as numeration, conservation, serialization and inclusion, among others. Furthermore, the development of linguistic awareness is achieved through a linear progressive and sustained pathway that eventually enables the child to become an expert, and this through consecutive phases of evolution.

A number of facts in the experiments within the scope of the present study indicate that the unilateral approach failed to explain the mentalist word theory's growth and function.

These facts are:

The development of the skill of distinguishing between linguistic appearance and linguistic reality is not achieved through a linear, progressive and sustained pathway. As a matter of fact, even young children have the same linguistic abilities as older ones, concerning some specific domains. This undermines the unilateral claim that the child's linguistic awareness improves constantly through a progressive and sustained growth pathway that goes up from lack of meta-linguistic expertise to the attainment of such an expertise.

The growth pathway of evaluating false belief competence is not subject to a sustained increase rate solely but also to other rhythms or rates of growth (such as regressions or stagnations) and this observation makes our findings incompatible with the unilateral principle of the "hierarchical growth".

The multi-variability principle, which is a fundamental principle of the mentalist word theory, differently from the essential unilateral paradigm of single-factor theories which imply the rule of "whole structures", implies the existence of intra-individual variability (that is to say, the variation in performance for the same subjects from the first task to the second task), of inter-individual variability (that is to say, in our case, the presence of inter-individual differences within all age groups younger than seven years in the task of the false belief on word-concept), and of cross-cultural variability (that is to say, the discrepancy between our results and those of a number of Western studies, especially the fact that we found that the child may become aware of the word-concept at an age much earlier than the one claimed by other studies).

Thus, we have to admit that the unilateral paradigm is limited in explaining "real-world" phenomena, and cannot adequately explain the formation of the mentalist word theory. As such, it should be replaced by another paradigm that is much more open and much more efficient. This is the pluralistic paradigm.

Indeed, many studies have approached the formation of the word-concept within the pluralistic paradigm that we advocate. Some studies have, in fact, concluded that this formation is subject to intra-individual variability and that it is not limited to a progressive and sustained pathway but is also subject to periods of recession (Bassono, Eme & Maillachon, 1999).

Other scholars have stressed the important role of inter-contextual variability in the development of the child's word-concept awareness. Karmiloff-Smith et al. (1996) maintained the role of word-concept awareness of the child in particularly suspenseful situations (for example, while a story is being narrated, the narrator pauses and asks the subject to recall the last word he/she heard) and concluded that the child may become aware of the word-concept at the pre-school phase; in other words, at an age much earlier than what Berthoud-Papandropolou (1980) claimed.

We would like to notice here that one of the exciting conclusions of Karmiloff-Smith et al. (1996) is that four-year-old subjects with a percentage of 75% and five-year-old children with a percentage of 95% considered the open-class words (like adjectives, nouns, verbs) and the closed-class words (such as conjunctions, prepositions) as words.

In our study, we also recorded that the child demonstrates a number of meta-linguistic abilities before the age of eight years – earlier than the age claimed by Berthoud-Papandropolou (1980); such ability is demonstrated by the fact that he/she considers the adverbial particle “*qorbal*” (meaning “near” in Arabic language) as a word. Another proof is his/her awareness at five years of age of the arbitrary relationship between names and their references (in the “*Dirham*” item or in the Alice in Wonderland task).

As is the case with Karmiloff-Smith (1980), the main reason for the emergence of such meta-linguistic competence within our data is the type and nature of our tasks, which take the form of game-like scenarios. This enables subjects to feel happy, relaxed and perfectly at their ease, especially with the Alice in Wonderland task. In this manner, we were able to discover the child's meta-linguistic competence through an indirect path and, most importantly, at an earlier age than other researchers.

We decided not to adopt the Berthoud-Papandropolou's task that takes the form of school-like and direct questions (such as “What does the word “word” mean to you?”) or explicit instructions (like “Give me an example of a long word”). Such questions ended up positioning the child in inappropriate context and this caused the researcher to discover the child's linguistic awareness at a later age than we did. Thus, we believe that the child's mentalist word theory varies according to the nature of the tasks used. Hence, the important role of inter-contextual variability.

In spite of the small margin of inter-individual variability recorded within the experiment of this study, a number of pluralistic researchers have, in fact, recorded the importance of this factor in the acquisition, formation and development of the child's word-concept. These researchers include well-known scholars, such as Bassano (1999), Fenson (1994, cited by Karmiloff-Smith, 1997) and Keznick (1997, cited by Karmiloff-Smith, 1997a).

We think it would be inappropriate to use the data in this study to build up cross-cultural or inter-lingual comparisons as there is the absence of the homology in experimental conditions between our present study and other studies. However, this does not mean that we do not recognize the important role of cross-cultural and inter-lingual variabilities in the formation and refinement of the child's word-concept.

As such, we agree with many studies like the investigation performed by Gopnik and Choi (1995) or by Bassano (1999) when it is stated that the cross-cultural and inter-lingual variabilities play a major role in the evolution of the child's mentalist word theory.

To conclude, on the basis of our experimental data and given the extant scholarly literature, the mentalist word theory appears to be a complex, variable phenomenon. Indeed, the data emerged from our experiments are of invaluable significance with regards to intra-

individual and inter-contextual variabilities. Such types of variability are more than sufficient to deny the universality claim and rather reinforce the value of pluralistic theories and models. However, in spite of the fact that the mentalist word theory is variable and relative, it still is possible to draw local pathways of its evolution based on our current data.

4.3.2. The Coalition Aspect in the Formation of the Mentalist Word Theory

Our data seem to strongly indicate that the development of the mentalist word theory is achieved through a course of conceptual changes that enables the child to eventually transform naïve knowledge into scientific knowledge.

We would like to stress that this is not realized all at once, but rather *via* a lengthy process that goes through an intermediate phase where the child tries to combine together his/her naïve beliefs and the scientific knowledge, which he/she most often learns at school, in order to build up some sort of a synthetic theory, thus giving rise to an original syncretism.

Hence, the course of conceptual changes in language is rather similar to conceptual changes occurring in the domains of Physics and Astronomy (Ioannides, & Vasniadou, 2002). In other words, the child does not abolish his/her primitive linguistic knowledge all at once but rather combines it with the new inputs to formulate some sort of new, hybrid theories (Carey & Johnson, 2000).

In addition to the coalition mechanism used by the child during the course of conceptual changes, he/she also uses and exploits the differentiation mechanism. The use of the latter mechanism is not restricted to the formation of concepts in Mathematics and Physics as indicated by some researchers (discriminating the hot from the warm, force from energy) (Carey 1991, Ioannides, & Vasniadou, 2002) but is also of significant relevance to the formation of the word-concept.

This is clearly demonstrated by the fact that low-level pupils in the experiments carried out in our study consistently confused words, letters and spelling (writing). For example, in the replies to the “train” item task, we received replies like “I have chosen the word */asdiqae/*” (meaning “friends” in Arabic language) because it is longer to write, ... because it contains a lot of words [instead of letters]”. At a more advanced level, we got justifications as “The word */asdiqae/*” (meaning “friends” in Arabic language) represents the longest word in the given sentence, because it contains a larger number of letters”.

Schooling has a very influential role convincing the child to give up to his/her naïve and even to his/her complex theories for embracing scientific knowledge. The important role of the schooling factor is clearly demonstrated by the outstanding variability between the answers given by kindergarten pupils and those by pupils at more advanced levels.

Thus, we emphasize that without schooling there may be no real progression of conceptual changes and the subject would undoubtedly limit himself/herself to his/her naïve word theory.

In this respect, Kolinsky, Carey & Morais (1987) concluded that illiterate adults tend to have the same level of semantic awareness of primary school pupils. We would like to add that this conclusion is not specific to the mentalist word theory but is also pertinent (for example) to the formation of the naïve astronomical theory. As a matter of fact, the representations of illiterate adults about the earth’s roundness (sphericity) and other astronomy-related concepts are rather similar to those of a young pupil (Vosniadou, 2007).

The reality is that kindergarten pupils do have a naïve word theory that enabled them to deal with the task of distinguishing linguistic appearance *versus* linguistic reality. This pre-

built knowledge is gradually developed, built, refined, expanded and guided by pseudo-innate and specialized principles (Karmiloff-smith, 1992).

On the whole, various factors contribute to the formation of the mentalist word theory:

- Innate/pseudo-innate knowledge.
- Acquired knowledge (learned either at school or out-of-school).
- The dynamics of the internal cognitive system.

Hence, as Hollich et al. (2000) argued in their coalition model, the child may use multiple cues in his/her endeavor to acquire, develop and refine the word-concept.

CONCLUSION: VALIDITY AND LIMITATION OF THE HYPOTHESES

We conclude that the mentalist word theory with a unilateral approach (Herriman, 1981; Smith, 1979; Berthoud-Papandropolou, 1980) fails to explain “real-world” phenomena.

1) On the contrary, the variability of the mentalist word theory is demonstrated by:

- The growth pathways not subject to linear, progressive and sustained growth rates but (also) subject to periods of stability, regression and recessions.
- Intra-individual variability as demonstrated by the performance of examinees that varies with the task of false belief about word-concept on one hand and the task of distinguishing between linguistic appearance *versus* linguistic reality on the other hand.
- Inter-contextual variability as demonstrated by the fact that a slight modification of the task enables us to get results that are different from those of other studies. Indeed, facilitating the task and making it more appropriate enables us to discover the child’s meta-linguistic activity at an age much earlier than what Berthoud-Papandropolou (1980) specified.
- Cross-cultural and inter-lingual variability: for the sake of scientific validity we would specify that our data are insufficient to measure the extent of these two types of variability. As such, further research is warranted.

2) The coalition dimension in the evolution of the mentalist word theory.

To summarize, we can say that the mentalist word theory is built through a course of conceptual changes. This progression is a coalition activity that involves a number of different factors: namely, innate/pseudo-innate knowledge, knowledge learnt and acquired both at school and out-of-school, and the complex dynamics of the cognitive system.

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Chapter 16

VERBAL GRAMMAR CORRELATION INDEX (VGCI) AS A TOOL OF COMPARATIVE LINGUISTICS

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ABSTRACT

Method of comparative linguistics based on comparison of lexis allows making different conclusions about the genetic classification of the same language. When different conclusions are based on the same methodology it is the best evidence that such methodology (comparison of lexis) is irrelevant. Language isn't a heap of lexemes, but is ordered pair $\langle A; \Omega \rangle$ where A is set of grammatical meanings and Ω is set of positional distributions defined upon A . On the base of such understanding of language was elaborated Verbal Grammar Correlation Index (VGCI). The main idea of VGCI is simple: more closely related languages have more alike sets of grammatical meanings and their common meanings are distributed in more alike positions, so the index of correlation of more closely related languages is higher. VGCI is the direct comparison of languages which exist/existed in reality. VGCI works with pure structures (it doesn't use any reconstructions or comparison of material exponents). Tests of VGCI on the material of firmly assembled stocks (Austronesian; Indo-European; Sino-Tibetan) showed the following: if value of VGCI is about 0.4 or higher it means that compared languages are related; if value of VGCI is about 0.3 or lower it means that compared languages aren't related. With use of VGCI have been found relatives of Ainu language (Great Andamanese language and Sino-Tibetan stock) and has been proven relatedness of Austronesian and Austroasiatic stocks. VGCI can be extremely useful in the fields of genetic classifications of indigenous languages of the Americas, Papuan languages and Australian Aboriginal languages.

Keywords: comparative linguistics, Verbal Grammar Correlation Index, typological methods in comparative linguistics, Ainu, Andamanese, Austronesian, Austroasiatic, Sino-Tibetan

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1. INTRODUCTION TO THE PROBLEM

In contemporary linguistics can be seen an obsession of discovering the relationship of certain languages by comparison of lexis and an obsession to separate analysis of structures from historical linguistics. The main problem of all hypotheses of so called distant relationship is that it is not based on any firmly testable method, but just on certain particular views and on “artist sees so” principle. Tendency to think that typology should be separated from historical linguistics was inspired by Joseph Greenberg in West and Segrei Starostin and Nostratic tradition in USSR/Russia. Despite followers of Nostractics insist that their methods differ from those of Greenberg, but actually their methods are almost the same: they take word lists, find some look-alike lexemes¹ and on the base of these facts conclude about genetic relationships of certain languages. Followers of Greenberg and Starostin consider typological studies as rather useless glass bead game. Typological items are never considered as a system by adepts of megalocomparison²; usually some randomly selected items are taken outside of their appropriate contexts. For instance, active or ergative typology, or the fact of so called isolating or polysynthetic typology (i.e., items that are unusual in the native languages of researchers and that shock researchers’ minds) are considered as interesting exotic items, while no attention is paid to holistic and systematic analysis of language structures. Such approach makes typology be a curiosity store, but not a tool of comparative linguistics. However, according to founding-fathers of linguistics, typology should be the main tool of historical linguistics. According to the mythology created by adepts of megalocomparative linguistics has actually little connection with typology and makes its statements by the use of a lexicostatistical hoodoo. Often megalocomparativists object on such critics saying that they also pay attention to structural issues and also compare morphemes. Actually the megalocomparative comparison of morphemes is analysis in a lexical way, i.e., only material implementations of morphemes are compared, so there is no difference between such comparison and comparison of lexemes. The fact that any morpheme consists of three components (meaning, position and material implementation) is ignored; and morphemes are actually reduced to their material components. Almost no attention is paid to the fact that grammar is first of all positional distribution of certain meanings. There is a presupposition that genetic relationship of two languages can be proved by discovering of look-alike lexemes of so called basic vocabulary and by finding out certain regular phonetic correspondences.

So called “basic vocabulary” is actually a badly defined issue; there are no clear criteria which could determine: what lexis belongs to so called “basic lexicon” and what doesn’t. So called “basic lexicon” is actually culturally determined (Hoijer 1956) and borrowings can be inside it. Any scholar who uses the methodology of lexicostatistics actually can determine basic vocabulary according to certain particular wishes arbitrarily widening or narrowing it: if there is a need to show relatedness “basic vocabulary” can be narrowed, if there is a need to show that compared languages aren’t related “basic vocabulary” can be widened, and particular conclusions seriously depend on the preferences of particular scholar. When I say

¹ Nobody actually cares that sometimes certain lexemes can look alike just by coincidence: the shorter certain lexeme is, the higher is the probability that there can be randomly alike lexemes with close meanings in some other languages.

² Megalocomparison is a term invented by James Matisoff (Matisoff 1990); the term is used to denote attempts to discover the relationship of certain languages by so called “mass comparison” of lexis.

that “artist sees so” principle is the base of lexicostatistics it isn’t a figure of speech it’s nothing else, but just ascertaining of a fact.

However, yet Atoine Meillet pointed at the fact that regular phonetic correspondence can appear due to borrowings and can’t be proofs of relationship:

Grammatical correspondences provide proof, and they alone prove rigorously, but only if one makes use of the details of the forms and if one establishes that certain particular grammatical forms used in the languages considered go back to a common origin. Correspondences in vocabulary never provide absolute proof, because one can never be sure that they are not due to loans (Meillet 1954: 27).

Regular phonetic correspondence can be between words of any randomly selected languages. For instance, it is possible to find some regular correspondence between Japanese and Cantonese and even “prove” their relationship: *boku* Japanese personal pronoun “I” used by males – Cantonese *buk* “servant”, “I”; Japanese *bō* “stick” – Cantonese *baang* “stick”; Japanese *o-taku* “your family”, “your house” or “your husband” – Cantonese *zaak* “house”; Japanese *taku* “swamp” in compounds – Cantonese *zaak* “swamp”; Japanese *san* “three” – Cantonese *sam*; Japanese *shin* “forest” used in compounds – Cantonese *sam* “forest”; Japanese *roku* “six” – Cantonese *lūk*; Japanese *ran* “orchid” – Cantonese *laan* “orchid”. If there would be no other languages of the so called Buyeo³ group and no languages of Chinese stock we would have no ability to single those words as items borrowed from Southern Chinese dialects since they have same regular and wide use as words of Japanese origin. In the case of Japanese and Cantonese we know history of their stocks rather well and have many firm evidences that Japanese isn’t a relative of Chinese stock

If someone thinks that this example about Japanese and Cantonese is just an odd joke, then everyone can take a look at the procedure that was used by Greenberg in order to prove that Waikuri language belonged to Hokan family⁴: the conclusion that Waikuri belonged to Hokan stock was based on comparison of FOUR (!) words only (Poser, Campbell 1992: 217 – 218). Also, we should keep in mind that Greenberg actually didn’t care much about precise phonetic correspondences and superficial likeness was rather sufficient for him.

Phonetic correspondences can be even between unrelated languages and so a stock can’t be proved by regular correspondences, but regular correspondences should be proved by the existence of a stock since truly regular phonetic correspondences exist only inside stocks.

A methodology that ignores structural/grammatical issues allows different scholars to make completely different conclusions about the same language, for instance: Sumerian is thought to be a relative of Uralic stock (Pärpola 2007), or Sino-Tibetan (Braun 2001, 2004), or Austroasiatic (Diakonoff 1997). Another notable example is Ainu that is attributed to Altaic (James Patrie 1982), to Austronesian (Murayama Shichirō 1993), to Mon-Khmer (Vovin 1993)⁵. The most notable fact is that all such attempts coexist and all are considered by public as rather reliable in the same time. It looks much alike a plot for a vaudeville sketch

³ Buyeo stock is conventional name of a group that includes Japanese, Korean and Ryukyuan languages. Close relatedness of Japanese and Korean has been proven in Akulov 2016.

⁴ Waikuri is an extinct language that existed in Southern part of Baja California (pic 1). Hokan stock is a hypothetical stock of a dozen small language families that were spoken mainly in California, Arizona and Baja California (pic 1).

⁵ Ainu is especially attractive material for perfunctory and naïve hypotheses.

rather than a serious matter of a science. Different methods can lead to different conclusions, but if people use same methodology they supposedly are expected to make same conclusions about the same material, however, we don't see it; it means only that methodology based on comparison of lexis is a completely irrelevant method for historical linguistics.

The main function of any language is to be an instrument of communication, but in order to be able to communicate first of all we have to set a system of rubrics/labels/markers, that's why the main function of any language is to rubricate/to structurize reality. Structural level/grammar is the mean that rubricates reality and so it is much more important than lexicon. I suppose we can even say that structure appeared before languages of modern type, i.e., when the ancestors of *Homo sapiens* developed possibility of free combination of two signals inside one "utterance" it had already been primitive form of modern language. Structure is something alike bottle while lexicon is liquid which is inside the bottle; in a bottle can be put wine, water, gasoline or even sand but bottle always remains the same.

To those who think that structure is not important I can give the following example: *Gakusei ha essei wo gugutte purinto shita*. "Having googled an essay student printed [it]". What makes this phrase be a Japanese phrase? Words *gakusei* "student" (a word of Chinese origin), *essei* "essay" (a word of English origin), *purinto* "print" or, may be, "Japanese" verb *guguru* "to google"?

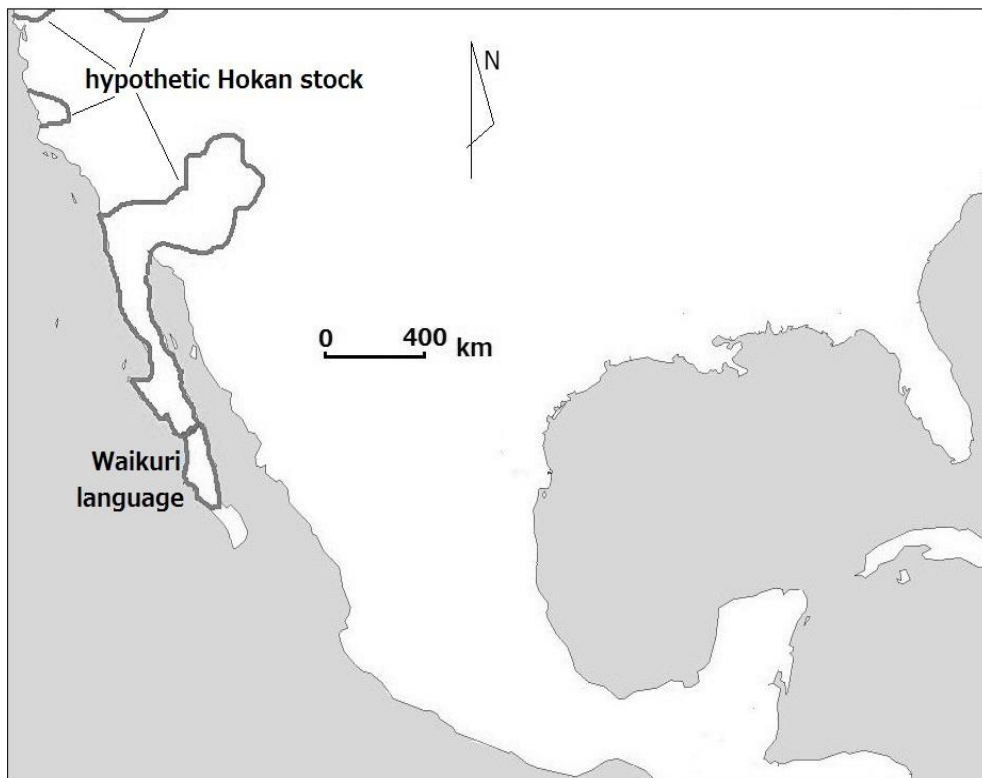


Figure 1. Geographic location of Waikuri language and hypotheticalal Hokan stock.

All the above considered facts mean that comparison of lexis should not be base of genetic classification of languages and any researches about genetic affiliation should be based on comparative analysis of grammar, i.e., comparison of grammatical systems is completely obligatory procedure to prove/test some hypothesis of genetic affiliation of a language.

2. A DESCRIPTION OF THE METHOD

2.1. General Theoretical Background of the Method

Language is first of all grammar. Grammar is ordered pair of the following view: $\langle A; \Omega \rangle$ where A is set of grammatical meanings and Ω is set of positional distributions defined upon A .

It is possible to estimate the degree of proximity of grammars by estimation degrees of proximities of sets of grammatical meanings and sets of positional distributions and then take superposition of both indexes.

It is rather obvious that the more closely related are certain languages the higher value of the correlation index they demonstrate: languages which are closer relatives have more common grammatical meanings and these common meanings have more alike positional implementations; languages which are more distant relatives have less common grammatical meanings and these common meanings demonstrate less alike positional implementations.

2.2. The Main Idea of the Method and Its Value for Comparative Linguistics

It was supposed that there was certain threshold value of the correlation index that determined the borders of stocks, i.e., if certain particular value of the correlation index is higher than the threshold, then compared languages are relatives, if certain particular value is lower than threshold value then compared languages are not related.

It was supposed that having compared distant relatives of firmly assembled stocks it could be possible to detect the threshold value of the correlation index (i.e., value of the correlation index that demonstrated distant relatives) and then this threshold could be applied to languages with unsettled genetic affiliation in order to see whether they were related to certain other languages.

And threshold value has been detected after comparison of distant relatives belonging to such firmly assembled stocks as: Austronesian, Austroasiatic, Indo-European and Sino-Tibetan (see 2.6).

Should be specially noted that the method is intended to make a direct comparison of languages that exist/existed in reality, i.e., it doesn't suppose any use of reconstructions which often are much alike constructed languages since they in many cases are determined by particular preferences of authors and can't be verified anyhow.

Also should be noted that the method doesn't pay any attention to material implementations at all, i.e., the method supposes comparison of meanings and their positional distributions only. It isn't a response to radical adepts of lexicostatistics who harshly ignore

issues of grammar, but it just a practical matter of reality since material correlation (regular phonetic correspondences) between languages which are distant relatives can be a very complicated matter, so the method is intended to prove genetic relationship/unrelatedness only by the comparison of sets of meanings and by comparison of their positional distributions.

The last point is especially important in the case of comparison of Sumerian with certain other languages. Sumerian phonology is not even a reconstruction, but is just a very approximate rough imagination based on Sumerian-Akkadian dictionaries. The case of Sumerian is this very issue where any comparison of material implementations should be completely eliminated and where any conclusions about possible relationship should be made on the analysis of pure structures only.

2.3. Why the Method Is Based on Comparison of Verbal Grammar?

Why it is supposed that it is possible to conclude about the relatedness of certain languages considering only verbal grammar? It is possible because verbal grammar is much more universal than the grammar of noun. There are many languages which have almost no grammar of noun while there is no language without verbal grammar, i.e., there are languages which have no cases and genders, but there are no languages without modalities, moods, tenses and aspects (even language that are very close relatives can differ seriously in that case, for instance: English and German or Russian and Bulgarian). That's why the verb is considered as the backbone of any grammar and backbone of the comparative method.

2.4. Whether Is It Possible to Prove Genetic Unrelatedness of Certain Languages?

An important point of current consideration is the possibility to prove unrelatedness of certain languages.

The possibility to prove unrelatedness is a necessary tool of any classification as well as possibility of proving of relatedness. If there would be no possibility to prove unrelatedness then even a single stock hardly could be assembled since it would not be possible to detect certain languages which don't belong to this stock.

Possibility of proving of unrelatedness is discussed and proved in the following papers: Akulov 2015b; Brown 2015.

Relatedness/unrelatedness is an equivalence relation since it meets necessary and sufficient requirements for a binary relation to be considered as equivalence relation:

1. Reflexivity: $a \sim a$: a is related with a ;
2. Symmetry: if $a \sim b$ then $b \sim a$: if a is related with b then b is related with a ;
3. Transitivity: if $a \sim b$ and $b \sim c$ then $a \sim c$: if a is related with b and b is related with c then a is related with c .

If it has been proved that an x language belonging to X stock is related/unrelated to y language belonging to Y stock then it means that x is related/unrelated to the whole Y stock and that whole stocks X and Y are correspondingly related/unrelated.

Thus, can be resumed the following:

- a) Relatedness means “language belongs to a stock”; unrelatedness means “language doesn’t belong to a stock”.
- b) If set of 234 classes/stocks⁶ has been set up, then it obviously supposes that there should be a possibility of classification, i.e., we can say whether a language belongs to a stock; moreover, we always can show some languages which don’t belong to certain stock. If possibility to prove unrelatedness is denied then we actually can’t establish scopes of stocks and can’t distinguish one stock from another; then even a single stock hardly could have been assembled.

Any two randomly selected languages can be related or not related, i.e., there can be no ‘third variant’ since relatedness/unrelatedness supposes the existence of classes which don’t intersect. If a language of X stock is related to a language of Y stock it means that these stocks are related.

2.5. The Algorithm of Calculation of Verbal Grammar Correlation Index (VGCI)

2.5.1. An Abstract Scheme of VGCI Calculation

Let’s imagine two abstract model languages: X and Y.

X is described by the following sets:

A_X (set of grammatical meanings of X) is the following: $\{x_1, x_2, x_3, x_4, x_5, x_6\}$;

Ω_X (set of positional distributions of grammatical meanings of X) is the following:

$\{x_1 \rightarrow p_1; x_2 \rightarrow p_1, p_2; x_3 \rightarrow p_2, x_4 \rightarrow p_2, p_3; x_5 \rightarrow p_4, x_6 \rightarrow p_5\}$

Y is described by the following sets:

A_Y (set of grammatical meanings of Y) is the following: $\{y_1, y_2, y_3, y_4, y_5\}$

Ω_Y : (set of positional distributions of grammatical meanings of Y) is the following:

$\{y_1 \rightarrow p_1; y_2 \rightarrow p_1, p_2; y_3 \rightarrow p_2, y_4 \rightarrow p_5, p_3; y_5 \rightarrow p_4\}$

It is possible to estimate degree of correlation between X and Y by the following way:

- 1) estimate degree of correlation between A_X and A_Y (to do it we have to find intersection of A_X and A_Y and then take intersection ratio to the number of elements of each set and then take arithmetical mean of both ratios);

⁶ According to Ethnologue nowadays there are 234 language stocks/families (Ethnologue 2016).

- 2) estimate degree of correlation of positional distributions of common grammatical meanings (i.e., meanings belonging to intersection of A_X and A_Y);
- 3) take superposition of two indexes since lists of grammatical meanings and lists of positional distributions should be correlated in the same time.

The degree of correlation A_X and A_Y is the following: intersection of A_X and A_Y is $\{y_1, y_2, y_3, y_4, y_5\}$, let's suppose that all elements of A_Y are correlated by one-to-one correspondence with first five elements of A_X , so intersection consists of 5 elements and thus the ratios of elements belonging to the intersection to the numbers of elements of A_X and A_Y are the following: $5/6$ and $5/5$, and then the arithmetical mean of both ratios is the following: $(5/6 + 5/5)/2 \approx 0.9$.

Degree of correlation of positional distributions of grammatical meanings belonging to intersection of A_X and A_Y is estimated by the following way:

- $x_1: p_1 \leftrightarrow y_1$: p_1 positional distributions are identical so index of correlation is 1
 $x_2: p_1, p_2 \leftrightarrow y_2$: p_1, p_2 positional distributions are identical so index of correlation is 1
 $x_3: p_2 \leftrightarrow y_3$: p_2 positional distributions are identical so index of correlation is 1
 $x_4: p_2 \neq y_4$: p_5 positional distributions are dissimilar so index of correlation is 0
 $x_5: p_4 \leftrightarrow y_5$: p_4 positional distributions are identical so index of correlation is 1

And then to estimate degree of positional correlation we should take sum of all particular indexes of positional correlation and take their arithmetical mean: $(1 + 1 + 1 + 0 + 1)/5 = 0.8$.

Then in order to get the final index of correlation of X and Y we have to take superposition of two indexes since lists of grammatical meanings and positional distributions both should be correlated simultaneously, i.e., we have to multiply two indexes, in current case it gives the following value: $0.9 \cdot 0.8 = 0.72$.

Thus resuming the above said it is possible to represent scheme of calculation of index of correlation by the following formula:

$$\left(\frac{N_{e(A \cap B)}}{N_{e(A)}} + \frac{N_{e(A \cap B)}}{N_{e(B)}} \right) \frac{1}{2} \times \left(\frac{i_1 + i_2 + \dots + i_n}{N_{e(A \cap B)}} \right)$$

A is set of grammatical meanings of one language;

B is set of grammatical meanings of another language;

N_e means amount of elements;

i means index of positional correlation of certain common meaning.

2.5.2. An Example of VGCI Calculation: Comparison of English and Russian

First of all we need to take the list of grammar meanings of both compared languages (in current case of English and Russian).

I am to note that in current text I pay attention mostly to so called contentive grammatical meanings. i.e., not to, for instance, markers of transitivity, but to such items as: markers of tenses, aspects, modalities and so on, i.e., to those grammatical categories which have certain content that can be expressed by lexical means.

As far as it can be a rather complicated task to distinguish obligatory features of certain verb from facultative so first of all attention should be paid to the following categories:

- a) tenses and aspects;
- b) mood and modalities;
- c) voices;
- d) agent, patient, object, subject.

Also, there can be certain specific categories like, for instance: markers of evidentially (a kind of modality), or spatial orientation/versions (can be considered as a development of triggers system), that's why good descriptions are matters of high importance (however, often same items can be described by different terms).

In every language usually there are about 20 – 40 grammatical meanings expressed in the verb, so actually the list of possible meanings is rather compact and all meanings can be surveyed rather easily. This is one of important and substantial differences of this methodology from methodology based on comparison of lexis since in the case of lexis it's almost impossible to determine border of so called basic lexicon and much depends on particular preferences of certain authors.

2.5.2.1. The List of English Grammatical Meanings Expressed in the Verb with Their Positional Implementations

The list of English grammatical meanings expressed in verb and their positional implementations has been compiled after Barhkhudarov et al. 2000.

1. Active voice: zero marker
2. Agent: prp- / [prp-] * 6 -sfx⁷
3. Causative: prp-
4. Conditional mood: prp-
5. Deontic modality: prp-₁/prp-₂/prp-₃/prp-₄
6. Desiderative: prp-₁/prp-₂
7. Future continuous: prp + prp + -sfx
8. Future perfect: prp- + prp- + inner fusion/prp- + prp+ -sfx
9. Future perfect continuous: prp + prp + prp- + -sfx
10. Future simple: prp-
11. Hortative: prp-
12. Imperative: R (zero marker)
13. Impossibility: prp-
14. Indicative: zero marker
15. Interrogative: prp-
16. Negation: prp-
17. Optative: prp-
18. Passive voice: prp- + -sfx/prp- + inner fusion

⁷ In such way of recording only syntagmatically different elements are taken into account so while elements that belong to the same paradigm are generally considered as variants of the same element, for instance: prepositional way of expression of agent in English supposes an endless set of elements (personal pronouns, names, nouns) but from the syntagmatic point of view they all are just particular realizations of the same item.

19. Past continuous: prp + -sfx
20. Past simple: inner fusion/suppletion/-sfx
21. Past perfect: prp + -sfx/prp + inner fusion
22. Past perfect continuous: prp- + prp + -sfx
23. Patient: -pp
24. Plural number: prp-/ [prp-] * 3 -sfx
25. Possibility: prp-
26. Present continuous: prp- * -sfx
27. Present perfect: prp- + -sfx/prp + inner fusion
28. Present perfect continuous: prp- + prp + -sfx
29. Present simple: 6 -sfx
30. Prohibitive: prp-₁/prp-₂
31. Singular number: prp-/ [prp-] * 3 -sfx
32. Subject: prp-/ [prp-] * 6 -sfx
33. Subjunctive mood: prp-

2.5.2.2. The List of Russian Grammatical Meanings Expressed in the Verb with Their Positional Implementations

The list of Russian grammatical meanings expressed in verb and their positional implementations has been compiled after Wade 2011.

1. Active voice: zero marker
2. Agent: [prp] * 6 -sfx
3. Attemptive aspect/mood: prfx-
4. Causative: prp-
5. Deontic modality: prp-₁/prp-₂/prp-₃
6. Desiderative: prp-₁/prp-₂
7. Feminine gender: -sfx
8. Future perfect: prfx-₁ * 6 -sfx/prfx-₂ * 6 -sfx/prfx-₃ * 6 -sfx/prfx-₄ * 6 -sfx/prfx-₅ * 6 -sfx/prfx-₆ * 6 -sfx/prfx-₇ * 6 -sfx/prfx-₈ * 6 -sfx
9. Future simple: prp- + -sfx/prfx- * 6 -sfx
10. Indicative: zero marker
11. Imperative1: -sfx₁/-sfx₂/-sfx₃/inner fusion + -sfx₁
12. Imperative2: -sfx₁ + -sfx/-sfx₂ + -sfx/inner fusion + sfx₁ + -sfx
13. Impossibility1 prp-
14. Impossibility2 prp-
15. Indicative mood: zero marker
16. Interrogative: prp-
17. Masculine gender: -sfx (zero suffix)
18. Negation: prp-
19. Neutral gender: -sfx
20. Passive voice: prp- + -sfx
21. Past simple: -sfx/suppletion + -sfx
22. Past perfect: prfx-₁ + -sfx/prfx-₂ + -sfx/prfx-₃ + -sfx/prfx-₄ + -sfx/prfx-₅ + -sfx/prfx-₆ + -sfx/prfx-₇ + -sfx/prfx-₈ * 6 -sfx/prfx-₁ + suppletion + -sfx/prfx-₂ + suppletion + -

- sfx/prfx-₃ + suppletion + -sfx/prfx-₄ + suppletion + -sfx/prfx-₅ + suppletion + -sfx/prfx-₆ + suppletion + -sfx/prfx-₇ + suppletion + -sfx/prfx-₈ * suppletion * 6 -sfx
23. Patient: -pp
 24. Plural number: [prp-] * 3 -sfx
 25. Potential modality: prp-
 26. Present perfect: prfx-₁ + -sfx/prfx-₂ + -sfx/prfx-₃ + -sfx/prfx-₄ + -sfx/prfx-₅ + -sfx/prfx-₆ + -sfx/prfx-₇ + -sfx/prfx-₈ * 6 -sfx/prfx-₁ + suppletion + -sfx/prfx-₂ + suppletion + -sfx/prfx-₃ + suppletion + -sfx/prfx-₄ + suppletion + -sfx/prfx-₅ + suppletion + -sfx/prfx-₆ + suppletion + -sfx/prfx-₇ + suppletion + -sfx/prfx-₈ + suppletion * 6 -sfx
 27. Present simple: 6 -sfx / inner fusion * 6 -sfx
 28. Prohibitive: prp-₁/prp-₂
 29. Reciprocity: -sfx
 30. Reflexivity: -sfx
 31. Singular number: [prp-] * 3 -sfx
 32. Subject [prp-] * 6 -sfx
 33. Subjunctive mood: prp-

Each grammatical meaning is followed by certain schemes of letters and signs. These are notations representing general schemes of positional implementation of certain grammatical meaning.

Notations of positional implementations are the following: prp- – preposition; prfx- – prefix; -infx- – infix; crfx---crfx – circumfix; crp---crp – circumposition; -RR- – reduplication⁸; inner fusion – any irregular changes inside the root; suppletivism; R – root; -sfx – suffix; -pp – post position.

If there are some different forms of same positional implementations (i.e., forms used in different contexts) they are numbered the following way: prp₁-/prp₂-/prp₃- and distinguished by slash, however, they also can be marked by the following way, for example: 6 -sfx that means six different suffixes; positional elements that are components of the same implementation are expressed in the following way: prp- + -sfx.

If a certain positional element can optionally be omitted, then it is written in square brackets for instance: [prp-].

Notation of the following view: [prp-] * 6 -sfx means that there are 6 different suffixes expressing certain grammatical meaning and each of them can optionally be accompanied by a preposition.

This way of notation shows not absolute positions of grammatical meanings in a linear model of word form/linear model of phrase⁹, but their positions in relation to nuclear position, i.e., it doesn't matter what prefix is placed closer to the nuclear position and what is placed in a more distant position since for current tasks is necessary and sufficient information that certain meanings are expressed by positions placed to the left of the nuclear position.

⁸ Reduplication is interpreted as reiteration of root.

⁹ Can be spoken out the following objection: certain languages have no linear models of word forms as far as they have no morphology; however, I am to note that even with increasing the degree of analytism (i.e., when a language syntaxizes and grammatical meanings begin to be expressed by the means of syntax) the positional distributions of grammatical meanings in relation to the nuclear position remain the same in general, and thus it is possible to say that there is no much difference between morphology and syntax and it is possible to speak about linear model of word form/linear model of phrase.

Also should be specially noted that this way of notation just shows places and technical means of expressions of grammatical meanings, i.e., I don't care about 'school grammar', for instance, I am not interested in how many verbal stems there are in a certain language. I consider language as something alike dark box with many holes, and implementation of certain grammatical meaning is light appearing in some holes and my task is to record in what holes light appears and then compare recording of different boxes (i.e., different languages).

2.5.2.3. Estimation of Correlation of Grammatical Meanings Sets of English and Russian

1. Active voice
2. Agent
3. Causative
4. Deontic
5. Desiderative
6. Future perfect
7. Future simple
8. Imperative
9. Impossibility
10. Indicative
11. Interrogative
12. Negation
13. Passive voice
14. Past simple
15. Past perfect
16. Patient
17. Plural number
18. Potential modality
19. Present perfect
20. Present simple
21. Prohibitive
22. Singular number
23. Subject
24. Subjunctive mood

In the case of English and Russian we haven't met any serious problems with correlation of grammar meanings since both languages actually have rather alike grammatical systems, however, sometimes it can be rather complicated.

We have 24 common meanings (or relatively common, anyway we have to suppose some drift and backlash of meanings) so index of of correlation of sets of grammatical meanings is the following:

$$(24/33 + 24/33)/2 \approx (0.73 + 0.73)/2 = 0.73.$$

2.5.2.4. Estimation of Positional Correlation of Grammatical Meanings Intersection of English and Russian

Now should be estimated degree of correlation of positional implementations of common grammatical meanings singled out in 2.5.2.3.

Schemes of positional implementation will help us to do it: we take the schemes that have been drawn above and completely formally compare the set of positional schemes of each meanings; if there is no difference (positional schemes are the same or very close, for instance: prp- and prfx- is the same full correlation as prp- and prp-) then this point is counted as 1; if there is completely no correlation (for instance prp- and -pp) then we count it as 0, in other cases we estimate the degree of correlation.

System of recording is the following: first is name of a grammatical meaning that is common for both of compared languages (or meanings that are correlated), then is abbreviation of name of the first of compared languages (En for English and Rus for Russian, then first language schemes of expressions of this grammatical meaning, then sign of correlation “~” or anti-correlation “≠”, then abbreviation of the name of second language, then second language ways of expressions of the grammatical meaning and then number that expresses degree of correlation. If certain meaning can be expressed by some ways in such case schemes representing these ways are separated by slashes; if there are some similar items expressing the same meaning, for instance, some prepositions, then they are marked by lower index numbers.

1. Active voice: En: zero marker ~ Rus: zero marker 1
2. Agent: En: prp-/ [prp-] * 6 -sfx ~ Rus: [prp-] * 6 -sfx 0.75
3. Causative: En prp- ~ Rus: prp- 1
4. Deontic modality: En: prp-₁/prp-₂/prp-₃/prp-₄ ~ Rus: prp-₁/prp-₂/prp-₃ $(2/2 + 3/4)/2 \approx 0.87$
5. Desiderative: En: prp-₁/prp-₂ ~ Rus: prp-₁/prp-₂ 1
6. Future perfect: in En: prp- + prp- + -sfx/prp- + prp- + inner fusion ≠ Rus: prfx-₁ * 6 -sfx/prfx-₂ * 6 -sfx/prfx-₃ * 6 -sfx/prfx-₄ * 6 -sfx/prfx-₅ * 6 -sfx/prfx-₆ * 6 -sfx/prfx-₇ * 6 -sfx/prfx-₈ * 6 -sfx; 0.
7. Future simple: En: prp- ≠ Rus: prp- + -sfx/prfx- * 6 -sfx 0
8. Imperative: En: R ≠ Rus: -sfx₁-sfx₂-sfx₃/inner fusion + -sfx₁-sfx₁ + -sfx/-sfx₂ + -sfx/inner fusion + -sfx₁ + -sfx 0
9. Impossibility: En: prp- ~ Rus: prp₁-/prp₂- 0.75
10. Indicative: En: zero marker ~ Rus: zero marker 1
11. Interrogative: En: prp- ~ Rus: prp- 1
12. Negation: En: prp- ~ Rs: prp- 1
13. Passive voice: En: prp- + -sfx/prp- + inner fusion ~ Rus: prp- + -sfx 0.75
14. Past simple: En: inner fusion/suppletion/-sfx ~ Rus: -sfx/suppletion + -sfx $(1/3 + 1/2)/2 \approx 0.41$
15. Past perfect: En: prp + -sfx/prp + inner fusion ~ Rus:
prfx-₁ + -sfx/prfx-₂ + -sfx/prfx-₃ + -sfx/prfx-₄ + -sfx/
prfx-₅ + -sfx/prfx-₆ + -sfx/prfx-₇ + -sfx/prfx-₈ * 6 -sfx
prfx-₁ + suppletion + -sfx/prfx-₂ + suppletion + -sfx/prfx-₃ + suppletion + -sfx/
prfx-₄ + suppletion + -sfx/prfx-₅ + suppletion + -sfx/prfx-₆ + suppletion + -sfx/
prfx-₇ + suppletion + -sfx/prfx-₈ + suppletion * 6 -sfx $(1/2 + 1/16) \approx 0.28$

16. Patient: En: -pp ~ Rus: -pp 1
17. Plural number: En: prp-/ [prp-] * 3 -sfx ~ Rus: [prp-] * 3 -sfx 0.75
18. Potential modality: En: prp- ~ Rus: prp- 1
19. Present perfect: E: prp + -sfx/prp + inner fusion ~ Rus:
 $\text{prfx}_{-1} + \text{-sfx/prfx}_{-2} + \text{-sfx/prfx}_{-3} + \text{-sfx/prfx}_{-4} + \text{-sfx/}$
 $\text{prfx}_{-5} + \text{-sfx/prfx}_{-6} + \text{-sfx/prfx}_{-7} + \text{-sfx/prfx}_{-8} * 6 \text{-sfx}$
 $\text{prfx}_{-1} + \text{suppletion} + \text{-sfx/prfx}_{-2} + \text{suppletion} + \text{-sfx/prfx}_{-3} + \text{suppletion} + \text{-sfx/}$
 $\text{prfx}_{-4} + \text{suppletion} + \text{-sfx/prfx}_{-5} + \text{suppletion} + \text{-sfx/prfx}_{-6} + \text{suppletion} + \text{-sfx/}$
 $\text{prfx}_{-7} + \text{suppletion} + \text{-sfx/prfx}_{-8} + \text{suppletion} * 6 \text{-sfx} (1/2 + 16) \approx 0.28$
20. Present simple: in En: 6 -sfx ~ Rus 6 -sfx/inner fusion * 6 -sfx 0.75
21. Prohibitive: En: prp₋₁/prp₋₂ ~ Rus: prp₋₁/prp₋₂ 1
22. Singular number: En: prp-/ [prp-] * 3 -sfx ~ Rus: [prp-] * 3 -sfx 0.75
23. Subject: En: prp-/ [prp-] * 6 -sfx ~ Rus: it is expressed as: [prp-] * 6 -sfx 0.75.
24. Subjunctive mood: En: prp- ~ Rus: prp- 1

Thus we have got the following indexes of positional correlation for each meaning of intersection:

1. Active voice: 1
2. Agent: 0.75
3. Causative: 1
4. Deontic: 0.87
5. Desiderative: 1
6. Future perfect: 0
7. Future simple: 0
8. Imperative: 0
9. Impossibility: 0.75
10. Indicative: 1
11. Interrogative 1
12. Negation: 1
13. Passive voice: 0.75
14. Past simple: 0.41
15. Past perfect: 0.28
16. Patient: 1
17. Plural number: 0.75
18. Potential modality: 1
19. Present perfect: 0.28
20. Present simple: 0.75
21. Prohibitive: 1
22. Singular number: 0.75
23. Subject: in 0.75
24. Subjunctive mood: 1

In order to calculate the index of positional correlation we have to take the sum of all these indexes and then take their arithmetic mean:

$$(10 + 0.87 + 7 * 0.75 + 0.41 + 2 * 0.28) / 24 \approx 0.71.$$

2.5.2.5. VGCI of English and Russian

And finally we should multiply index of positional correlation of common meanings by the index of meanings correlations since we want to know in what degree sets of meanings are correlated and in what degree intersection of sets of meaning is positionally correlated, i.e., we need both indexes to do intersection or conjunction, so we do the following: $0.71 \cdot 0.73 \approx 0.52$.

2.6. Threshold Values of VGCI

Tests of VGCI on the material of firmly assembled stocks have given us the following threshold values:

VGCI of English and Russian ≈ 0.52 ;
VGCI of English and Lithuanian ≈ 0.43 ;
VGCI of English and Latin ≈ 0.41 ;
VGCI English and Persian ≈ 0.38 ;
VGCI of Hawaiian and Lha'alua ≈ 0.39 ;
VGCI of Chinese and Tibetan ≈ 0.39 .

From other hand tests of VGCI on the material of unrelated languages have shown us the following:

VGCI (Chinese and English) ≈ 0.32 ;
VGCI (Chinese and Latin) ≈ 0.3 ;
VGCI (English and Tibetan) ≈ 0.13 .

If value of VGCI is about 0.4 or more than 0.4 then languages are related (i.e., belong to the same stock), if value of VGCI is about 0.3 or less than 0.3 then languages are not related. Such values as 0.39 and 0.38 also are variants of 0.4; while 0.31 or 0.32 are variants of 0.3. The more closely are related certain languages, the higher is value of corresponding VGCI.

2.7. Measurement Error

Test of measurement error shows that it is about 2% (Akulov 2015a: 37).

2.8. Estimation of the Probability of Coincidence

One can probably say that occasionally any two randomly selected languages can seem to be relatives. Let's think whether it is possible. Let's estimate the probability of such event. We have seen that intersections of sets of meanings are shaped by 15 – 24 elements. Let's suppose that each meaning is expressed by only one positional implementation that which can be chosen from following list of possible positional implementations:

1. prp-
2. prfx-
3. crp---crp
4. crfx---crfx
5. -infx-
6. -RR-
7. inner fusion
8. suppletion
9. R
10. -sfx
11. -pp
12. tr-sf-x

It is possible to say that prp- and prfx- and so on are actually very close and can modify this list:

1. prp- ~ prfx-
2. crp---crp ~ crfx---crfx
3. -infx-
4. -RR-
5. inner fusion
6. suppletion
7. R
8. -sfx ~ -pp
9. tr-sf-x

We have got 9 positions, but actually it would be more convenient to deal with a list of 10 positions so let's round the value we got and let's suppose there are 10 positions.

According to our above proposition we supposed that one meaning can be expressed only in one position. What is probability to choose coincidentally the same position as has been chosen by the same grammatical issue in another language? Imagine that you toss up a decahedron. What is probability that once certain face will appear? The probability is one tenth and it is same for any other faces. However, we have to get about 19 average positions simultaneously, so we have to multiply 0.1 by 0.1 nineteen times. The probability is 10^{-19} . Actually the real probability is much less than 10^{-19} since in current estimation has been counted only probability of positional correlation and has not been estimated and counted the probability of choice of similar sets of grammatical meanings. Anyway, this probability is very little, it is much less than, for instance, probability of meeting Earth with a truly dangerous asteroid that is about $2.5 \cdot 10^{-4}$ (the Earth exists about 4 milliard years and serious asteroids visit it about once per million years).

A more detailed description of VGCI method can be seen in Akulov 2015a.

3. VGCI PROVES THAT AINU ISN'T RELATED TO AUSTRONESIAN AND MON-KHMER STOCKS

3.1. VGCI Proves that Ainu and Austronesian Stock are Unrelated

Basing on comparison of some randomly chosen lexemes Murayama Shichirō wrote that Ainu is a relative of Austronesian stock (Murayama 1993). Let's check whether it is so by use of VGCI.

3.1.1. *Ainu and Lha'alua*

3.1.1.1. The List of Ainu Grammatical Meanings Expressed in the Verb with Their Positional Implementations

The list of Ainu grammatical meanings and their positional distributions has been compiled after Tamura 2000.

1. Agent: [prp-] * 7 prfx-
2. Causative -sfx
3. Deontic modality: -pp
4. Desiderative mood: -pp
5. Dubitative mood ~ evidentiality "may be": -pp
6. Evidentiality "people say": -pp
7. Evidentiality "speaker has seen it" -pp
8. Evidentiality "something can be heard/smelt" -pp
9. Evidentiality "something can be seen" -pp
10. Exclusive prfx-₁/prfx-₂/-sfx
11. Future conditional: -pp₁-pp₂
12. Future simple: -pp + -pp
13. Hortative: -pp
14. Imperative (plain): R (zero marker)
15. Imperative (polite): -pp
16. Impossibility: -pp
17. Inclusive: prfx-₁/prfx-₂/-sfx
18. Indicative mood: zero marker
19. Intensiveness: -RR-/sfx₁/-sfx₂/suppletion
20. Interrogative: -pp₁/pp₂
21. Iterative: -RR-/suppletion/-sfx₁/-sfx₂
22. Negation: prp-
23. Patient: [prp-] * 7 prfx-
24. Past simple: -pp
25. Past perfect: -pp
26. Plural number: [prp-] *10 prfx-/ [prp-] * 2 -sfx/[prp-] *10 prfx- * -sfx/prp- * -sfx *2 -sfx/[prp-] *10 prfx- * suppletion/[prp-] * suppletion * 2 -sfx/[prp-] *10 prfx- * -RR-/[prp-] * -RR- * 2-sfx

27. Possibility: -pp
28. Present continuous: -pp + -pp₁ / -pp + -pp₂
29. Present-future (general tense) zero marker
30. Present perfect: -pp
31. Prohibitive mood: prp-
32. Reason/intention: -pp
33. Reciprocity: prfx-
34. Reflexivity: prfx-
35. Singular number: [prp-] * 9 prfx- / [prp-] * 9 prfx- * suppletion
36. Subject: [prp-] * 5 prfx / 2 -sfx
37. Subjunctive mood “if”: -pp
38. Transitivity: prfx-
39. Undefined agent: prfx₋₁/prfx₋₂/prfx₋₃
40. Undefined causative -sfx

3.1.1.2. The List of Lha'alua Grammatical Meanings Expressed in the Verb with Their Positional Implementations

Lha'alua (or Saaroa) is one of Formosan languages; it belongs to Tsouic languages (see Figure 2). The list of Lha'alua grammatical meanings and their positional implementations has been compiled after Pan 2012.

1. Actor voice: prfx-/infx-/zero marker
2. Agent prfx-/ 6 -sfx
3. Attenuative/diminutive aspect aspect: -RR-
4. Causative: prfx-
5. Change of state aspect: -sfx
6. Durative aspect: -RRR¹⁰/-RR-
7. Evidentiality (reported evidentiality): -sfx
8. Exclusive: -sfx
9. Existential negation: prp-
10. Experiential aspect: prfx-
11. Habitual aspect: -RR-
12. Hortative: -sfx
13. Imperative 1: polite request -sfx
14. Imperative 2: strong request: prp-/sfx
15. Imperfective aspect -sfx
16. Inchoative: prfx-
17. Inclusive: -sfx
18. Indicative: zero marker
19. Interrogative: -sfx
20. Irrealis: prfx-/infx-/RR-
21. Iterative aspect: -RR-/ -RRR-
22. Locative trigger (locative voice) -sfx₁/-sfx₂/-sfx₃
23. Negation: prp-

¹⁰ -RRR- is the sign of triplication.

24. Patient trigger (voice): -sfx
25. Perfective aspect: prfx-
26. Plural number: prfx-/4 suffixes
27. Potential modality: -sfx
28. Prohibitive: prp-
29. Realis: zero marker
30. Singular number: prfx-/sfx₁/sfx₂/sfx₃
31. Uncertain modality: -sfx₁/sfx₂/sfx₃

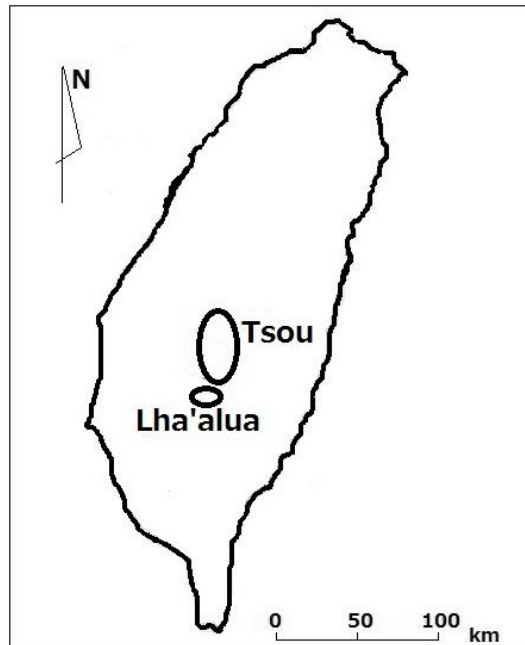


Figure 2. Location of Lha'alua and Tsou languages upon the island of Taiwan.

3.1.1.3. VGCI of Ainu and Lha'alua

1. Agent: A.: [prp-] * 7 prfx- ~ Lh.: prfx-/6 -sfx $(1/7 + 1/7)/2 \approx 0.14$
2. Causative: A.: -sfx $\neq$ Lh.: prp- 0
3. Dubitative mood ~ Uncertain modality: A.: -pp ~ Lh.: -sfx₁/sfx₂/sfx₃ 0.66
4. Present continuous ~ durative: A.: -pp + -pp₁ / -pp + -pp₂ $\neq$ Lh.: -RR-/RRR- 0
5. Evidentiality "people say" ~ reported evidentiality: A.: -pp ~ Lh.: -sfx 1
6. Exclusive: A: prfx₁/prfx₂/sfx ~ Lh: -sfx 0.66
7. Future simple ~ irrealis: A.: -pp + -pp $\neq$ prfx-/infx-/RR- 0
8. Hortative: A.: -pp ~ Lh.: -sfx 1
9. Imperative (plain) ~ strong request: A.: R $\neq$ Lh.: prp-/sfx 0
10. Imperative (polite) ~ polite request: A.: pp ~ Lh. -sfx 1
11. Inclusive: A: prfx₁/prfx₂/sfx ~ Lh: -sfx 0.66
12. Indicative: A.: zero marker ~ Lh: zero marker 1
13. Interrogative: A.: -pp₁/pp₂ ~ Lh.: -sfx 1
14. Iterative: A.: -RR-/suppletion/-sfx₁/sfx₂ ~ Lh.: -RR-/RRR- $(\frac{1}{2} + \frac{1}{4})/2 \approx 0.37$

15. Negation: A.: prp- ~ Lh.: prp- 1
16. Plural number: A.: [prp-] * 10 prfx-/ [prp-] * 2 -sfx/[prp-] * 10 prfx- * -sfx/prp- * -sfx * 2 -sfx/[prp-] * 10 prfx- * suppletion/[prp-] * suppletion * 2 -sfx/[prp-] * 10 prfx- * -RR-/ [prp-] * -RR- * 2-sfx ~ Lh.: prfx-/4 -sfx $(3/48 + 3/5)/2 \approx 0.33$
17. Present-future tense ~ Irrealis: A: zero marker $\neq$ Lh: prfx-/ -infx-/ -RR- 0
18. Present perfect: A.: -pp $\neq$ Lh.: prfx.: 0
19. Possibility: A.: -pp ~ Lh.: -sfx 1
20. Prohibitive: A.: prp- ~ Lh.: prp- 1
21. Singular number: A: [prp-] * 9 prfx-/ [prp-] * 9prfx- * suppletion ~ Lh.: prfx-/ -sfx₁/ -sfx₂/sfx₋₃ $(1/18 + 1/4)/2 \approx 0.15$

Conspectus system of recording is the following: first is name of a grammatical meaning that is common for both of compared languages (or meanings that are correlated), then is abbreviation of name of the first of compared languages, then first language schemes of expressions of this grammatical meaning, then sign of correlation "~" or anti-correlation " $\neq$ ", then abbreviation of the name of second language, then second language ways of expressions of the grammatical meaning and then number that expresses degree of correlation. If certain meaning can be expressed by some ways in such case schemes representing these ways are separated by slashes; if there are some similar items expressing the same meaning, for instance, some prepositions, then they are marked by lower index numbers.

VGCI of Ainu and Lha'alua is the following:

$$(21/40 + 21/31)/2 * (7 + 0.75 + 3*0.66 + 0.37 + 0.14 + 0.33 + 0.15)/21 \approx 0.3.$$

Such value of VGCI is the same as that of unrelated languages (2.6).

Due to transitivity of unrelatedness (2.4) even comparison of Ainu with one Austronesian language is sufficient for proving unrelatedness, but for the sake of much visibility Ainu is also compared with Cham and Hawaiian.

3.1.2. Ainu and Cham

The list of Ainu grammatical meanings can be seen in 3.1.1.1.

3.1.2.1. The List of Cham Grammatical Meanings Expressed in the Verb and Their Positional Implementations

The list of Cham¹¹ grammatical meanings and their positional distributions has been complied after Alieva, Bui 1999 and Aymontie 1889.

1. Active: prp-
2. Agent: prp-
3. Causative: prfx₁/prfx₂-
4. Centrifugal orientation: -pp
5. Centripetal orientation: -pp
6. Desiderative: prp-
7. Durative aspect1: prp-

¹¹ Cham is an Austronesian language spoken in Southern Vietnam (pic 3, pic 4).

8. Durative aspect2: prp-
9. Future: prp-
10. General tense ~ general aspect: zero marker
11. Imperative: -pp
12. Interrogative: -pp
13. Indicative: zero marker
14. Iterative 1: -pp
15. Iterative 2: prfx-
16. Negation: prp₁-/prp₂-/crp---crp
17. Passive: prp₁-/prp₂-
18. Past simple: prp₁-/prp₂-/-pp
19. Patient: -pp
20. Perfect aspect 1: -pp
21. Perfect aspect 2: -pp
22. Perfect aspect 3: -pp
23. Plural number: prp-
24. Potential modality: -pp
25. Prohibitive: prp-
26. Reciprocity: prfx-/pp
27. Singular number: prp-
28. Subject of intr: prp-

3.1.2.2. VGCI of Ainu and Cham

1. Agent: A.: [prp-] * 7 prfx- ~ Ch.: prp- $(1/7 + 1)/2 \approx 0.57$
2. Causative: A.: -sfx ≠ Ch: prp₁-/prp₂- 0
3. Desiderative: A.: -pp ≠ Ch: prp- 0
4. Future simple: A.: -pp ≠ prp- 0
5. Imperative: A.: R/-pp ≠ Ch: -pp 0.75
6. Indiative: A: zero marker ~ Ch: zero marker 1
7. Iterative: A.: -RR-/sfx₁/-sfx₂/suppletivism ~ Ch: prfx-/pp: $(1/2 + 1/4)/2 \approx 0.37$
8. Interrogative: A.: -pp₁/-pp₂ ~ Ch.: -pp 0.75
9. Negation: A.: prp- ~ Ch.: prp₁-/prp₂-/crp---crp 0.66
10. Past simple: A.: -pp ~ Ch: prp₁-/prp₂-/-pp 0.66
11. Patient: A.: [prp-] * 7 prfx- ≠ Ch: -pp 0
12. Plural number: A.: [prp-] * 10 prfx-/prp-] * 2 -sfx/[prp-] * 10 prfx- * -sfx/prp- * -sfx * 2 -sfx/[prp-] * 10 prfx- * suppletivism/[prp-] * suppletion * 2 -sfx/[prp-] + 10 prfx- + -RR-/prp-] * -RR- * 2-sfx ~ Ch.: prp- $(1/48 + 1)/2 \approx 0.51$
13. Possibility ~ potential modality: A.: -pp ~ Chm.: -pp 1
14. Present continuous ~ Durative: A: -pp + -pp₁/-pp + -pp₂ ≠ Ch: prp₁/prp₂ 0
15. Present-future ~ general tense: zero marker ~ Ch: zero marker 1
16. Present perfect: A.: -pp ~ Ch: -pp₁/-pp₂/-pp₃ 0.66
17. Prohibitive: A.: prp- ~ Ch: prp- 1
18. Reciprocity: A.: prfx- ~ Ch.: prfx-/pp 0.75
19. Singular number: A.: [prp-] * 9 prfx-/prp-] 9prfx- * suppletiion ~ Ch: prp- $(1/18 + 1)/2 \approx 0.53$

20. Subject: A.: [prp-] * 5 prfx-/sfx₁/sfx₂ ~ Ch.: prp- $(1/7+1)/2 \approx 0.57$

VGCI (Ainu and Cham) is the following:

$$(20/40 + 20/28)/2 * (4 + 2*0.75 + 3*0.66 + 2*0.57 + 0.53 + 0.51 + 0.37)/20 \approx 0.32.$$

Such value of VGCI means that languages are unrelated.

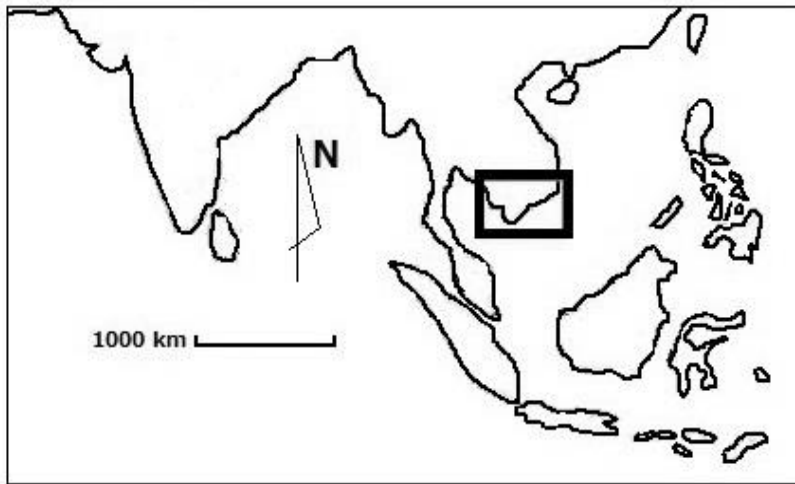


Figure 3. The region where Cham language is located.

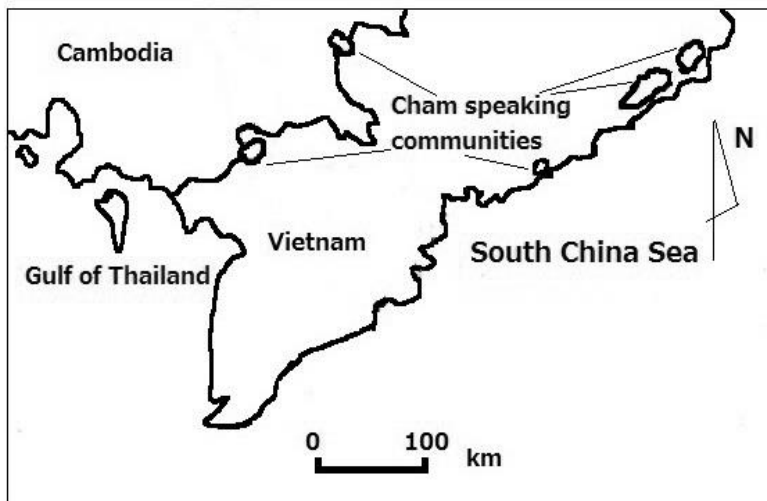


Figure 4. The map showing location of Cham speaking communities in Southern Vietnam.

3.1.3. Ainu and Hawaiian

The list of Ainu grammatical meanings can be seen in 3.1.1.1.

3.1.3.1. The List of Hawaiian Grammatical Meanings Expressed in the Verb and Their Positional Implementations

The list of Hawaiian grammatical meanings has been compiled after Krupa 1979.

1. Active voice: zero marker
2. Agent: -pp
3. Attemptive mood: prp-
4. Causative: prp-
5. Consequence: -pp
6. Deontic modality: prp-
7. Desiderative mood: prp-
8. Durative aspect: crp---crp₁/crp---crp₂
9. Frequency: -RR-
10. "If" mood: prp-
11. Imperative: prp-
12. Indicative mood: zero marker
13. Intensiveness: -RR-
14. Interrogative: -pp
15. Negation: prp-
16. Non-past tense ~ general tense: prp-
17. Passive voice: -pp
18. Past simple: prp-
19. Patient: -pp
20. Perfective aspect: prp-
21. Plural number: -RR- + -pp/prfx- + pp/-pp
22. Possibility: prp-
23. Prohibitive mood: prp-
24. Reason ~ in order to: prp-
25. Singular number: -pp
26. Subject: -pp

3.1.3.2. VGCI of Ainu and Hawaiian

1. Agent: A.: [prp-] * 7 prfx- ≠ H.: -pp 0
2. Causative: A : -sfx ≠ H.: prfx- 0
3. Deontic modality: A.: -pp ≠ H.: prp- 0
4. "If" mood ~ Subjunctive mood: A.: -pp ≠ H.: prp- 0
5. Imperative: A.: R/-pp ≠ H.: prp- 0
6. Indicative: A.: zero marker ~ H.: zero marker 1
7. Intensiveness: A.: -RR-/ -sfx₁/ -sfx₂/suppletion ~ H.: -RR- 0.62
8. Iterative ~ Frequency: A: -RR-/ -sfx₁/ -sfx₂/suppletion ~ H: -RR- 0.62
9. Interrogative: A.: -pp₁/ -pp₂ ~ H.: -pp 0.75
10. Negation.: A.: prp- ~ H.: prp- 1
11. Past simple tense: A.: -pp ≠ H.: prp- 0
12. Patient: A.: [prp-] *7 prfx- ≠ H.: -pp 0

13. Plural number: A.: [prp-] * 10 prfx-/ [prp-] * 2 -sfx/[prp-] * 10 prfx- * -sfx/prp- * -sfx * 2 -sfx/[prp-] * 10 prfx- * suppletion / [prp-] * suppletion * 2 -sfx/[prp-] * 10 prfx- * -RR-/ [prp-] * -RR- * 2-sfx ~ H.: -RR- + -pp/prfx- + pp/-pp (3/48 + 1)/2 $\approx$ 0.53
14. Possibility ~ potential modality: A.: -pp $\neq$ H.: prp- 0
15. Present continuous: A: -pp + -pp1/ -pp + -pp2 $\neq$ H: crp---crp₁/crp---crp₂ 0
16. Present-future (general tense) ~ Non-past tense: A.: zero marker ~ H.: prp- 0
17. Present perfect ~ perfective aspect: A.: -pp $\neq$ H.: prp- 0
18. Prohibitive: A.: prp- ~ H.: prp- 1
19. Reason/intention A.: -pp $\neq$ H.: prp- 0
20. Singular number: A.: [prp-] * 9 prfx-/ [prp-] * 9prfx- * suppletion $\neq$ H. -pp 0
21. Subject: A: [prp-] * 5 prfx-/ 2 -sfx ~ H: -pp (1/7 + 1)/2 $\approx$ 0.57

VGCI (Ainu; Hawaiian) is the following:

$$(21/26 + 21/40)/2 * (3 + 2*0.62 + 0.75 + 0.57 + 0.53)/21 \approx 0.19$$

Such value of VGCI means that compared languages are unrelated.

3.2. VGCI Proves that Ainu and Mon-Khmer are Unrelated

There is also a hypothesis that Ainu is a distant relative of Mon-Khmer (see, for instance: Vovin 1993). In order to see whether Ainu is a relative of Mon-Khmer VGCI is applied to Ainu and languages of Mon-Khmer stock.

3.2.1. *Ainu and Khmer*

The list of Ainu meanings can be seen in 3.1.1.1.

3.2.1.1. The List of Khmer Grammatical Meanings Expressed in the Verb and Their Positional Implementations

The list of Khmer grammatical meanings has been compiled after Gorgoniev 1961; Haiman 2011.

1. Active: zero marker
2. Agent: prp-
3. Causative1: prfx-/ -infx-
4. Causative2: prp-
5. Centrifuga1 version 1: -pp
6. Centrifugal version 2 “to go out” –pp
7. Centripetal version –pp
8. Deontic modality1: prp-
9. Deontic modality 2: prp-
10. Durative aspect: prp-
11. Future simple: prp-
12. General aspect: zero marker
13. “If” mood: prp-
14. Impossibility: -pp
15. Imperative: R

16. Indicative: zero marker
17. Interrogative: -pp
18. Negation: prp-/crfx-crfx
19. Passive: prp-
20. Patient: -pp
21. Perfect aspect: prp-
22. Possibility: prp-/pp
23. Prohibitive: prp-
24. Subject: prp-
25. Version “to move down” -pp
26. Version “to move inside” -pp
27. Version “to rise up” -pp
28. Volition: prp-

3.2.1.2. VGCI of Ainu and Khmer

1. Agent: A: [prp-] * 7 prfx- ~ Kh: prp- $(1/7 + 1)/2 \approx 0.57$
2. Causative: A: -sfx ≠ Kh: prp-/prfx-/infx- 0
3. Deontic modality: A: -pp ≠ Kh: prp₁/prp₂ 0
4. Desiderative ~ Volition: A: -pp ≠ Kh: prp- 0
5. Future simple: A: -pp + -pp ≠ Kh: prp- 0
6. “If” mood: A: -pp ≠ Kh: prp 0
7. Imperative: A: R/-pp ~ Kh: R 0.75
8. Impossibility: A: -pp ~ Kh: -pp 1
9. Indicative: A: zero marker ~ Kh: zero marker: 1
10. Interrogative: A: -pp₁/pp₂ ~ Kh -pp 0.75
11. Negation: A: prp ~ Kh: prp-/crfx---crfx 0.75
12. Patient: A: [prp-] * 7 prfx- ≠ Kh: -pp 0
13. Possibility: A: -pp ~ Kh: prp-/pp 0.75
14. Present continuous ~ Durative aspect: A: -pp + -pp₁/ -pp + -pp₂ ≠ Kh: prp- 0
15. Present-future ~ General aspect: zero marker ~ Kh: zero marker 1
16. Present perfect: A: -pp ≠ Kh: prp- 0
17. Prohibitive: A: prp- ~ Kh: prp-
18. Subject: A: [prp-] +5 prfx-/sfx₁/sfx₂ ~ Kh: prp $(1/7 + 1)/2 \approx 0.57$

VGCI of Ainu and Khmer is the following:

$$(18/40 + 18/28)/2 * (3 + 4*0.75 + 2*0.57)/18 \approx 0.21.$$

Such value of VGCI means that compared languages aren't related.

3.2.2. Ainu and Vietnamese

The list of Ainu grammatical meanings can be seen in 3.1.1.1.

3.2.2.1. The List of Vietnamese Grammatical Meanings Expressed in the Verb and Their Positional Implementations

The list of Vietnamese grammatical meanings compiled after Panfilov 1993.

1. Active voice: zero marker
2. Agent: prp-
3. Benefactive voice (positive meaning): prp-
4. Causative: prp-
5. Deontic modality: prp₁-/prp₂-
6. Desiderative: prp-
7. Durative aspect: prp-
8. Experiential aspect: prp-
9. Future simple: prp-
10. General tense ~ aspect: zero marker
11. Immediate future: prp-
12. Imperative: R/-pp/crp-crp₁/crp-crp₂/prp₁-/prp₂-
13. Indicative mood: zero marker
14. Negation: prp-
15. Passive voice (negative meaning): prp₁-/prp₂-
16. Past tense: prp₁-/prp₂-
17. Patient: -pp
18. Possibility: prp-/pp
19. Prohibitive: prp₁-/prp₂-/prp₃-
20. Perfect aspect: prp-/pp
21. Recent past: prp-
22. Subject of intransitive: prp-
23. Version 1 “to go” -pp
24. Version 2 “to come” -pp
25. Version 3 “to go up” -pp
26. Version 4 “to go out” -pp

3.2.2.2. VGCI of Ainu and Vietnamese

1. Agent: A: [prp-] * 7 prfx- ~ V: prp- $(1/7 + 1)/2 \approx 0.57$
2. Causative: A: -sfx ≠ V: prp 0
3. Deontic: A: -pp ≠ V: prp₁-/prp₂- 0
4. Desiderative: A: -pp ≠ V: prp- 0
5. Future simple: A: -pp + -pp ≠ V: prp- 0
6. Imperative: A: R/-pp ~ V: R/-pp/crp---crp₁/crp---crp₂/prp₁-/prp₂- $(1 + 2/6)/2 \approx 0.66$
7. Indicative mood: zero marker ~ V: zero marker 1
8. Negation: A: prp- ~ V: prp- 1
9. Past simple: A: -pp ≠ V: prp₁-/prp₂- 0
10. Patient: A: [prp-] + 7 prfx- ≠ V: -pp 0
11. Possibility: A: -pp ~ V: prp-/pp 0.75
12. Prohibitive: A: prp- ~ V: prp₁-/prp₂-/prp₃- 0.66

13. Present continuous ~ Durative aspect: A: -pp + -pp₁/ -pp + -pp₂ ≠ V: prp-
14. Present-future ~ General tense: A: zero marker ~ V: zero marker 1
15. Present perfect: A: -pp ~ V: prp-/ -pp 0.75
16. Subject: A: [prp-] * 5 prfx-/ 2 -sfx ~ V: prp-(1/7+1)/2 ≈ 0.57

VGCI of Ainu and Vietnamese is the following:

$$(16/26 + 16/40)/2 * (3 + 2*0.75 + 2*0.66 + 2*0.57)/16 \approx 0.22.$$

Such value of VGCI means that compared languages aren't related.

4. VGCI PROVES THAT AUSTRONESIAN AND MON-KHMER STOCKS ARE RELATED

During searches for Ainu language relatives has been discovered that Austronesian and Mon-Khmer stocks are relatives.

The Idea that Austronesian languages are distant relatives of Mon-Khmer stock was first spoken out by Wilhelm Schmidt (Schmidt 1906); later ideas of Schmidt were developed by Paul K. Benedict (Benedict 1976); Benedict also included Tai-Kadai and Hmong-Mien languages in this hypothetical Austric stock. This hypothesis like any other hypotheses of distant relationship had no firm proves until now, it was based mostly on comparison of randomly chosen lexemes. That's why now VGCI method is applied to it.

4.1. Austronesian and Khmer

4.1.1. Cham and Khmer

The list of Cham grammatical meanings can be seen in 3.1.2.1; that of Khmer can be seen in 3.2.1.1.

1. Active voice: Ch: zero marker ~ Kh: zero marker 1
2. Agent: Ch: prp- ~ Kh: prp 1
3. Centrifugal orientation/version: Ch: -pp ~ Kh: -pp 1
4. Centripetal orientation/version: Ch: -pp ~ Kh: -pp 1
5. Causative: Ch: prp₁-/prp₂- ~ Kh: prfx-/prp-/ -infx- (1+2/3)/2 ≈ 0.83
6. Desiderative mood ~ Volition: Chm: prp- ~ Kh: prp- 1
7. Durative aspect: Ch: prp₁-/prp₂- ~ prp- 0.75
8. Future simple: Ch: prp- ~ Kh: prp- 1
9. General tense ~ General aspect: Ch: zero marker ~ Kh: zero marker 1
10. Imperative: Ch: -pp ≠ Kh: R 0
11. Indicative: Ch: zero marker ~ Kh: zero marker 1
12. Interrogative: Ch: -pp ~ Kh: -pp 1
13. Negation: Ch: prp₁-/prp₂-/crp-crp ~ Kh: prp-/crfx-crfx (1+2/3)/2 ≈ 0.83
14. Passive: Ch: prp₁-/prp₂- ~ Kh: prp- 0.75

15. Patient: Ch: -pp ~ Kh: -pp 1
16. Perfect aspect: Ch: prp-₁/prp-₂/prp-₃ ~ Kh: prp- 0.66
17. Potential modality ~ Possibility: Ch: -pp ~ Kh: prp-/pp 0.75
18. Subject: Ch: prp- ~ Kh: prp- 1

VGCI of Cham and Khmer is the following:

$$(18/28 + 18/28)/2 * 15.57/18 \approx 0.55.$$

Such value of VGCI (see 2.6). means that Cham and Khmer are rather close relatives.

Cham and Khmer have been usually supposed to be members of the same sprachbund, i.e., scholars thought Cham can look alike Khmer and alike other languages of the region due to local contact influence. Of course, contacts can influence, for instance, on degree of analytism/synthetism, but I seriously doubt that contacts can influence on fundamental levels of grammar, i.e., on positional distributions. However, let's test more.

4.1.2. *Hawaiian and Khmer*

The list of Hawaiian grammatical meanings can be seen in 3.1.3.1; that of Khmer can be seen in 3.2.1.1.

1. Active: H: zero marker ~ Kh: zero marker 1
2. Agent: H: -pp ≠ Kh: prp- 0
3. Causative: H: prfx- ~ Kh: prfx-/infx-/prp- 0.66
4. Deontic modality: H: prp- ~ Kh: prp₁/prp₂- 0.75
5. Desiderative mood ~ Volition: H: prp- Kh: ~ prp 1
6. Continuous ~ Durative: H: crp---crp₁/crp---crp₂ ≠ Kh: prp- 0
7. Non-past tense/aspect ~ General aspect: H: prp- ≠ Kh: zero marker 0
8. Imperative: H: prp- ≠ Kh: R 0
9. Indicative: H: zero marker ~ Kh: zero marker 1
10. "If" mood: H: prp- ~ Kh: prp- 1
11. Interrogative: H: -pp ~ Kh: -pp 1
12. Negation: H: prp- ~ Kh: prp-/crfx---crfx 0.75
13. Passive: H: -sfx ≠ Kh: prp- 0
14. Patient: H: -pp ~ Kh: -pp 1
15. Perfective aspect: H: prp- ~ Kh: prp-1
16. Possibility: H: prp- ~ Kh: prp-/pp 0.75
17. Prohibitive: H: prp- ~ Kh: prp 1
18. Subject: H: -pp ≠ Kh: prp- 0

VGCI of Hawaiian and Khmer is the following:

$$(18/26 + 18/28)/2 * (8 + 3 * 0.75 + 0.66)/18 \approx 0.39$$

Such value of VGCI means that languages are distant relatives.

4.1.3. Lha'alua and Khmer

The list of Lha'alua grammatical meanings can be seen in 3.1.1.2; that of Khmer can be seen in 3.2.1.1.

1. Actor voice ~ Active voice: K: zero marker ~ Lh: pf-/infx-/zero marker 0.66
2. Agent: K: prp- ≠ Lh: sfx 0
3. Causative: K: prp-/prfx-/infx- ~ Lh: prp- 0.66
4. Durative aspect: K: prp- ~ Lh: -RR- 1
5. Realis ~ General aspect: K: zero marker ~ Lh: zero marker 1
6. Future simple: ~ Irrealis: K: prp- ~ Lh: prfx-/infx-/RR- 0.66
7. Imperative: K: R ≠ Lh: -sfx 0
8. Indicative: K: zero marker ~ Lh: zero marker 1
9. Interrogative: K: -pp ~ Lh: -sfx 1
10. Locative voice ~ one of versions K: -pp₁/-pp₂/-pp₃/-pp₄/-pp₅/-pp₆ ~ Lh: -pp (1 + 1/6)/2 = 0.58
11. Negation: Kh: prp-/crfx---crfx ~ Lh: prp- 0.75
12. Passive voice ~ Patient voice: K: prp- ≠ Lh: -sfx 0
13. Perfective aspect: K: prp ~ Lh: prfx- 1
14. Possible modality: Kh: prp-/pp ~ Lh: -sfx 0.75
15. Progressive aspect: K: prp- ~ Lh: -RR- 1
16. Prohibitive: K: prp- ~ Lh: prp- 1

VGCI of La'alua and Khmer is the following:

$$(16/28 + 16/31)/2 * (7 + 2 * 0.75 + 3 * 0.66 + 0.58)/16 \approx 0.38.$$

Such value of VGCI means that languages are distant relatives.

4.2. Austroneisan and Vietnamese

4.2.1. Vietnamese and Cham

The list of Vietnamese meanings can be seen in 3.2.2.1; that of Cham can be seen in 3.1.2.1.

1. Active voice: V: zero marker ~ Ch: zero marker 1
2. Agent: V: prp- ~ Ch: prp- 1
3. Causative: V: prp- ~ Ch: prp₁/prp₂- 0.75
4. Centrifugal orientation ~ Version 4 "to go out": V: -pp ~ Ch: -pp 1
5. Centripetal orientation ~ to come: V: -pp ~ Ch: -pp 1
6. Desiderative mood: V: prp- ~ Ch: prp- 1
7. Durative aspect: V: prp- ~ Ch: prp₁/prp₂- 0.75
8. Future: V: prp- ~ Ch: prp- 1
9. General tense: V: zero marker ~ V: zero marker 1
10. Imperative: V: R/-pp/crp-crp₁/crp-crp₂/prp₁/prp₂- ~ Chm: -pp 0.58
11. Indicative: V: zero marker ~ Ch: zero marker 1
12. Negation: V: prp- ~ Ch: prp₁/prp₂-crp-crp 0.66

13. Passive voice: V: prp₁-/prp₂- ~ Ch: prp₁-/prp₂- 1
14. Past tense: V: prp₁-/prp₂- ~ Ch: prp₁-/prp₂-pp 0.83
15. Patient: V: -pp ~ Chm: -pp1
16. Perfect: V: prp-/pp ~ Ch: prp₁-/prp₂-prp₃ 0.41
17. Possibility: V: prp-/pp ~ Ch: -pp 0.75
18. Prohibitive: V: prp₁-/prp₂-prp₃ ~ Ch: prp- 0.66
19. Subject: V: prp- ~ Ch: prp- 1

VGCI of Vietnamese and Cham is the following:

$$(19/26 + 19/28)/2 * (11 + 0.83 + 3 * 0.75 + 2 * 0.66 + 0.58 + 0.41)/19 \approx 0.6.$$

Such value of VGCI means that compared languages belong to the same stock.

4.2.2. Vietnamese and Hawaiian

The list of Vietnamese meanings can be seen in 3.2.2.1; that of Hawaiian can be seen in 3.1.3.1.

1. Active voice: V: zero marker- ~ H: zero marker 1
2. Agent: V: prp- ~ H: -pp 0
3. Causative: V: prp- ~ H: prfx- 1
4. Deontic modality: V: prp₁-/prp₂- ~ H: prp 0.75
5. Desiderative mood: V: prp- ~ H: prp- 1
6. Durative aspect: prp- ≠ crp-crp₁/crp-crp₂ 0
7. Imperative: V: R/-pp/crp-crp₁/crp-crp₂/prp₁-/prp₂- ~ H: prp- 0.58
8. Indicative: V: zero marker ~ H: zero marker 1
9. Negation: V: prp- ~ H: prp- 1
10. Non-past tense: V: zero marker ≠ H: prp- 0
11. Passive voice: V: prp₁-/prp₂- ≠ H: -sfx 0
12. Past tense: V: prp₁-/prp₂- ~ H: prp- 0.75
13. Patient: V: -pp ~ H: -pp 1
14. Perfect aspect: V: prp-/pp ~ H: prp- 0.75
15. Possibility: V: prp-/pp ~ H: prp- 0.75
16. Prohibitive: V: prp₁-/prp₂-prp₃- ~ H: prp- 0.66
17. Subject: V: prp- ≠ H: -pp 0

VGCI of Vietnamese and Hawaiian is the following:

$$(17/26 + 17/26)/2 * (6 + 4 * 0.75 + 0.66 + 0.58)/17 \approx 0.39.$$

Such value of VGCI means that compared languages are distant relatives.

4.2.3. Vietnamese and Lha'alua

The list of Vietnamese meanings can be seen in 3.2.2.1; that of Lha'alua can be seen in 3.1.1.2

1. Active voice ~ Actor voice: V: zero marker ~ Lh: pf-/infx-/zero marker + R 0.66
2. Agent: V: prp- ≠ V: -sfx 0

3. Causative: V: prp- ~ Lh prp- 1
4. Durative aspect: V: prp- ~ Lh: -RR- 1
5. Experience ~ Experiential: V: prp- ~ Lh: prp- 1
6. General tense ~ realis: V: zero marker ~ Lh: zero marker 1
7. Future ~ irrealis: V: prp- ~ Lh: prfx-/infx-/RR- 0.66
8. Imperative: V: R/-pp/crp-crp₁/crp-crp₂/prp₁-prp₂- ~ Lh: sfx (1 +1/6)/2 = 0.58
9. Indicative: V: zero marker ~ Lh: zero marker 1
10. Irrealis ~ future: V: prp- ~ Lh: prfx-/infx-/RR- 0.66
11. Locative voice ~ any version: V: -pp₁/pp₂/pp₃/pp₄ ~ Lh: -sfx₁/sfx₂/sfx₃ 0.87
12. Negation: V: prp- ~ Lh: prp- 1
13. Passive voice ~ patient voice: V: prp₁-prp₂- ≠ Lh: -sfx 0
14. Perfect aspect: V: prp-/pp ~ Lh: prfx- 0.75
15. Possibility: V: prp-/pp ~ Lh: sfx 0.75
16. Prohibitive: V: prp₁/prp₂/prp₃ ~ Lh: prp- 0.66

VGCI of Vietnamese and Lha'alua is the following:

$(16/26 + 16/31)/2 * (6.87 + 2.64 + 1.5 + 0.58)/16 \approx 0.4$.

Such value of VGCI means that languages belong to the same stock.

4.3. Conclusion about Austronesian and Mon-Khmer Stocks Relatedness

4.3.1. General Notes on Proximity of Grammatical Meanings Distributions

Values of VGCI received above evidently show relatedness of Austronesian and Mon-Khmer (Austroasiatic)¹² stocks:

VGCI of Khmer and Cham is 0.55;

VGCI of Khmer and Hawaiian is 0.39;

VGCI of Khmer and Lha'alua is 0.38.

VGCI of Vietnamese and Cham is 0.6;

VGCI of Vietnamese and Hawaiian is 0.39;

VGCI of Vietnamese and Lha'alua is 0.4

These data should be interpreted in the context of VGCI values of languages of firmly assembled stocks:

VGCI of English and Russian is 0.52;

VGCI of English and Lithuanian is 0.43;

VGCI of English and Latin is 0.41;

VGCI English and Persian is 0.38;

VGCI of Hawaiian and Lha'alua is 0.39;

VGCI of Chinese and Tibetan is 0.39.

¹² As far as Mon-Khmer is just a part of Austroasiatic stock, so due to transitivity of relatedness it's possible to state relatedness of whole Austronesian to whole Austroasiatic. And thus it is possible to name this Austronesian-Mon-Khmer stock Austric stock.

Probably in the case of Cham and Khmer and in the case of Cham and Vietnamese it is possible to speak about certain contact influence. In the case of Cham and Vietnamese value of VGCI actually shows that they belong not even to the same stock, but to the same group (VGCI value of a group should be higher than 0.56, for more details see Akulov 2016). I don't think that contact influence can seriously change deep levels of grammar, i.e., basic positional distributions of grammatical meanings; contacts usually influence on superficial items of languages, for instance: language can become less or more analytical, can appear certain new affixes, but no contacts can influence can't fundamental level of grammar. And I want to ask those who are obsessed by the mythology of "languages in contacts": what "contact influence" was in the case of Khmer and Hawaiian or in the case of Hawaiian and Vietnamese?

4.3.2. Some Characteristic Features of So Called Austric Stock

4.3.2.1. Markers of Causative

Beside above shown general proximity/similarity of positional distributions of common grammar meanings there are certain noteworthy grammatical similarities.

One of such similarities is the way of expression of causative mood/causative voice in Austroneisan and Mon-Khmer: in both stocks causative is expressed by prepositions/prefixes; in Austronesian languages can be seen even an amazing material resemblance of causative markers: Cham: *pa-*; Hawaiian: *ho'o-/hō* " *-hō-/ha'a-/hā* " *-hā-*; La'alua: *poa-*. In Khmer can be seen almost the same prefix: *p-* (taking into consideration the fact that degree of consonantism of Khmer seems to be higher than that of Cham, so it's rather possible to suppose drift from *pa-* in Cham to *p-* in Khmer). In Vietnamese we don't see such form (probably if we pay attention to certain dialects we can see something alike) and causative is expressed by a newly made form, but anyway this newly made form is prefixed/preposed.

4.3.2.2. The System of Focus/Triggers/Orientations

Another amazing structural similarity is so called focuses/triggers system, i.e., system of several voices; each voice accents on certain particular issue of action/process: on agent, on instruments, on location, on patient et c. Due to this fact such system of voices is called the system of focuses.

Austronesian languages (especially Austronesian languages of Taiwan) are well known for their systems of focuses; while in Mon-Khmer languages systems of focuses are almost unknown. However, in Vietnamese we actually can see focuses system: it is possible to say that in Vietnamese there are focuses: actor focus, benefactive focus and patient focus; this system correlates well with Austronesian system that is well represented in Lha'alua.

I hardly can imagine that system of focuses is a new item appeared in Vietnamese due to contacts with languages of Austronesian. I would rather suppose gradual decay of system of focuses in Vietnamese under the influence of contacts and appearing a Chinese alike system of two voices; however, as I mentioned above I think that contacts influence actually is too much overrated.

The only possible conclusion is that such system of focuses in Vietnamese obviously is a relic of a well elaborated focuses system of Formosan/Philippine type.

In Cham and in Khmer, however, we don't see focuses, but in Cham and in Khmer we can see orientations.

Orientation (or spatial orientation) is a special grammatical category that is used when speaker/subject attitude toward an action/process is expressed by, for instance, verbs of movement.

Orientations can be seen in different languages, for instance: in Ket there are spatial orientation markers (Werner 1997: 183); in Japanese there are directionally tinted aspectual markers (Lavrent'yev 2002: 127 – 133) and markers of whether an action/process is focused on subject or patient – these last are actually connected with Japanese system of formalized politeness (Ibid: 174 – 181).

Whether the system of orientations in Ket or in Japanese was somehow connected with any system of focuses is theme for special research; however, I do suppose that in the case of Austronesian and Mon-Khmer it is possible to speak about transformation of focuses system into the system of orientations/versions.

In Vietnamese there are three triggers and four orientations: *ra* “to go out”, *lên* “to ascend”, *lại* “to come”, *đi* “to go” (Panfilov 1993: 182 – 183).

In Khmer we don't see triggers, but we can see just a system of orientations: *cen* “to go out”, *mōk* – centripetal, *coh* – “to move down”, *cōl* “to enter”/“to move inside” inside”, *laən* “to ascend” (Gorgoniev 1961: 94 – 95).

In Cham we can see only two markers or orientation: *ngw* “to go” – centrifugal orientation and *maj* “to come” – centripetal orientation (Alieva, Bui 1999: 73).

Thus, as I suppose, it is possible to conclude the following:

Austronesian has triggers system, in Vietnamese we can see relics of triggers and well elaborated system of orientations; in Khmer and Cham we don't see triggers but see systems of orientations, so I came to the conclusion that in the case of Austric languages triggers system could transform into the system of orientations (spatial orientations are especially well correlated with locative triggers). Anyway this is theme for further reasearches.

4.3.2.3. Further Perspectives of Austric Stock

After Austronesian and Mon-Khmer relationship has been firmly proved then, first of all, should be solved the following questions: whether Tai-Kadai and Hmong-Mien stocks are relatives of Austric stock.

Also I am specially to note that typological proves don't deny discovering of cognates, though many megalocomparativists probably think it does.

Of course, typology is the base, but since typological relatedness has been firmly proven there is no obstacles for discovering cognates that obviously exist, but cognates should be true cognates.

5. VGCI PROVES THAT AINU IS RELATIVE OF GREAT ANDAMANESE AND SINO-TIBETAN STOCKS

5.1. VGCI Proves that Ainu Is a Relative of Great Andamanese

5.1.1. General Notes on Great Andamanese and Other Languages of Andaman Islands

The Great Andamanese languages are an extinct stock¹³ spoken by the Great Andamanese peoples of the Andaman Islands¹⁴, in the Indian Ocean.

Great Andamanese stock is supposed to be unrelated to other languages spoken upon the island of Andaman: such as Ongan (Jangil, Jarawa and Onge) and to Sentinelese¹⁵ (Abbi 2009). However, I suppose that actually Great Andamanese and Ongan stocks probably can be distant relatives.

5.1.2. The List of Great Andamanese Grammatical Meanings Expressed in the Verb and Their Positional Implementations

The list of Great Andamanese meanings has been compiled after Choudary 2006.

1. Agent: [prp-] * 8 prfx-
2. Causative: prfx-
3. Conditional: -sfx
4. Durative: -sfx
5. *Evidentiality¹⁶ 1 “hearsay”
6. *Evidentiality 2 “it can be seen”
7. Exclusive: prfx-1/prx-2/prx-3
8. Habitual: -sfx
9. Imperative: -sfx
10. Inclusive: prfx-1/prx-2
11. Indicative: -sfx
12. Interrogative: prp-
13. Negation prfx-/-sfx
14. Non-past: -sfx
15. Past simple: -sfx
16. Patient: prfx-1/prfx-2/prfx-3/prfx-4/prfx-5
17. Plural number: [prp-] + prfx-
18. Prohibitive: -sfx
19. Reason: -pp
20. Reflexivity: prfx-

¹³ Despite Great Andamanese is actually a stock, but in current text they are considered as a single language.

¹⁴ Figure 5.

¹⁵ Sentinelese language hasn't been described anyhow yet since Sentinelese people intentionally escape any contacts with anthropologists/linguistics (Lukina 2016).

¹⁶ The description of Great Andamanese that I used is actually rather meager, it seems that some features of verb aren't mentioned, that's why I suppose it's possible to reconstruct some features, i.e.: it's possible to reconstruct such features as markers of evidentiality since they obviously should be represented in this language.

21. Singular number: [prp-] * 4 prfx-
22. Subject: [prp-] * 8 prfx-
23. Transitivity: prfx-

5.1.3. VGCI of Ainu and Great Andamanese

The list of Ainu grammatical meanings with their positional distributions can be seen in 3.1.1.1.

1. Agent: A: [prp-] * 7 prfx- ~ An.: [prp-] * 8 prfx- $(1 + 7/8)/2 \approx 0.94$
2. Causative: A: -sfx $\neq$ An: prfx- 0
3. Conditional ~ Future conditional: A: -pp₁/-pp₂ ~ An: -pp 0.75
4. Durative: A: -pp + -pp₁/-pp + -pp₂ ~ An: -sfx 0
5. Evidentiality “hearsay”: A: -pp ~ An: -pp 1
6. Evidentiality “it can be seen”: A: -pp ~ An: -pp 1
7. Exclusive: A: prfx₋₁/prfx₋₂/-sfx ~ An: prfx₋₁/prx₋₂/prx₋₃ 0.66
8. General tense ~ Non-past: A: zero marker $\neq$ An: -sfx 0
9. Inclusive: A: prfx₋₁/prfx₋₂/-sfx ~ An: prfx₋₁/prfx₋₂ $(1 + 2/3)/2 \approx 0.83$
10. Imperative: A: R/-pp $\neq$ An: -sfx 0.75
11. Indicative: A: zero marker ~ An: -sfx 0
12. Interrogative: A: -pp₁/-pp₂ $\neq$ An: prp- 0
13. Negation: A: prp ~ An: prfx-/sfx 0.75
14. Plural number: A: [prp-] * 10 prfx-/ [prp-] * 2 -sfx/[prp-] * 10 prfx- * -sfx/[prp-] * -sfx * 2 -sfx/[prp-] * 10 prfx- * suppletion/[prp-] * suppletion * 2 -sfx/[prp-] * 10 prfx- * -RR-/ [prp-] * -RR- * 2-sfx ~ An.: 6 prfx- $(1 + 6/8)/2 \approx 0.56$
15. Past simple: A: -pp ~ An: -sfx 1
16. Patient: A: 7 prfx- ~ 5 prfx- $(1 + 5/7)/2 \approx 0.86$
17. Prohibitive: Ai: prp- $\neq$ An: -sfx 0
18. Reason: A: -pp ~ An: -pp 1
19. Reflexivity: A: prfx- ~ An: prx- 1
20. Singular number: Ai: [prp-] * 9 prfx-/ [prp-] * 9prfx- * suppletion ~ An.: 4 prfx- $(1 + 4/18)/2 \approx 0.61$
21. Subject: A: [prp-] * 5 prfx-/ [prp-] * 2 -sfx ~ 8 prfx- $(5/7 + 5/8)/2 \approx 0.66$
22. Transitivity: Ai: prfx- ~ An: prfx- 1

VGCI Ainu and Great Andamanese is the following:

$$(22/24 + 22/40)/2 * (5 + 0.94 + 3*0.75 + 2*0.66 + 0.83 + 0.86 + 0.56 + 0.61)/22 \approx 0.4.$$

Such value of VGCI is the same as value of VGCI of English and Persian (see 2.6).

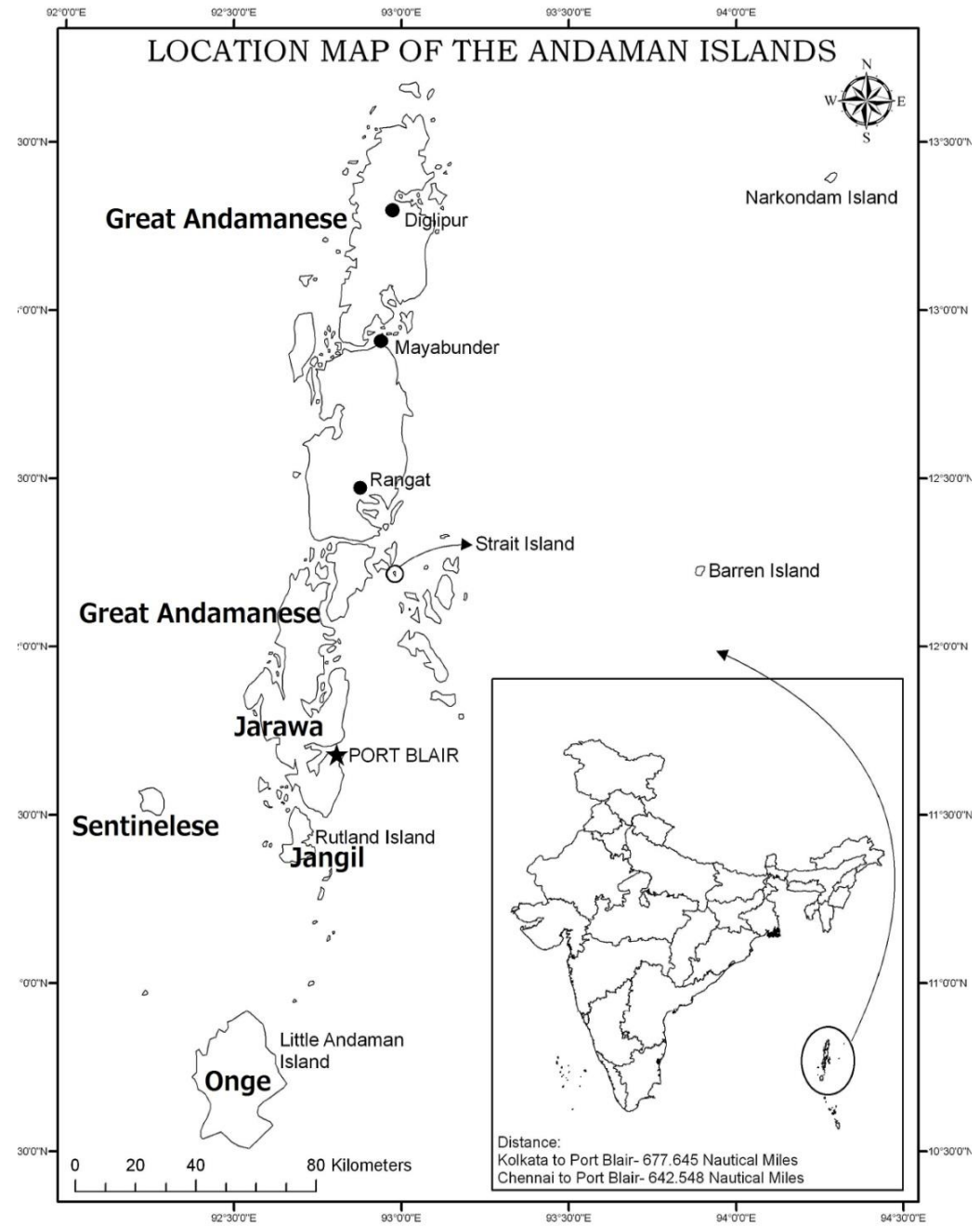


Figure 5. Spread of Great Andamanese and other languages of the Andaman islands in the beginning of 19th century (Source: Abbi, A. The Unique Structure...).

5.2. VGCI Proves that Ainu and Sino-Tibetan Stock Are Relatives

5.2.1. The List of Qiang Grammatical Meanings Expressed in the Verb and Their Positional Implementations

The list of Qiang meanings has been compiled after LaPolla, Huang 1996. Geographic location of Qiang language can be seen in pic 6.

1. Actor: 6 -sfx
2. Ability 1 learned: -sfx
3. Ability 2 natural: -sfx₁/-sfx₂
4. Ability 3: -sfx
5. Causative: -sfx
6. Centrifugal version: -pp
7. Centripetal version: -pp
8. Change of state aspect: -sfx
9. Continuative aspect ~ Progressive: prfx-/sfx
10. Declarative: -pp
11. Deontic modality: -sfx + -pp
12. Desiderative: -sfx
13. Directional: 8 prfx-
14. "To dare" to do: -sfx
15. Evidentiality 1 "hearsay": -sfx
16. Evidentiality 2 mirative: -sfx
17. Evidentiality 3 "see": -sfx
18. Experiential aspect: -sfx
19. Habitual aspect: -sfx₁/-sfx₂
20. Hortative: -pp₁/-pp₂/-pp₃/-pp₄
21. Imperative: zero marker
22. Imperfective aspect: zero marker
23. Indicative: zero marker
24. Intentional: -sfx + -pp
25. Interrogative: -pp₁/-pp₂/-pp₃/-pp₄/-pp₅
26. Negation: prfx-
27. Optative: -pp₁/-pp₂/-pp₃
28. Patient/non-actor/benefactive: 6 -sfx
29. Perfective aspect – resultative: 8 prfx-/prfx- + -pp
30. Permissive: -sfx
31. Plural: 9 -sfx
32. Prohibitive: prfx-/pp₁/-pp₂
33. Reciprocity: -RR-
34. Repetition: -sfx
35. Resultative: prfx- + -pp
36. Simultaneity: -pp
37. Singular: 9 -sfx
38. Subject: 6 -sfx

5.2.2. VGCI of Ainu and Qiang

The list of Ainu meanings can be seen in 3.1.1.1.

1. Actor: A: [prp-] * 7 prfx- $\neq$ Q: 6 -sfx 0
2. Causative: A: -sfx $\sim$ Q: -sfx 1
3. Deontic: A: -pp $\sim$ Q: -sfx + -pp 1
4. Desiderative: A: -pp $\sim$ Q -sfx 1
5. Durative $\sim$ Continuative: A: -pp + -pp₁/ -pp + -pp₂ $\sim$ Q: prfx-/sfx 0.5
6. Evidentiality “people say” $\sim$ hearsay: A: -pp $\sim$ Q -sfx 1
7. Evidentiality: “speaker has seen it” $\sim$ see: A: -pp $\sim$ Q: -sfx 1
8. Experiential aspect $\sim$ Past simple: A: -pp $\sim$ Q -sfx 1
9. Hortative: A: -pp $\sim$ Q: -pp₁/-pp₂/-pp₃/-pp₄ $(1 + \frac{1}{4})/2 = 0.625$
10. Imperative: A: zero marker/-pp $\sim$ Q: zero marker 0.75
11. Imperfective $\sim$ General tense: A: zero marker $\sim$ Q zero marker 1
12. Indicative: A: zero marker $\sim$ Q: zero marker 1
13. Intention: A: -pp $\sim$ Q -sfx + pp 1
14. Interrogative: A: -pp₁/-pp₂ $\sim$ Q: -pp₁/-pp₂/-pp₃/-pp₄/-pp₅ $(1 + 2/5)/2 = 0.7$
15. Negation: A: prp- $\sim$ Q: prp- 1
16. Patient: A: [prp-] * 7 prefixes $\neq$ Q: 6 -sfx 0
17. Perfective aspect: A: -pp $\neq$ Q: 8 prfx-/prfx- + -pp 0
18. Plural: A: [prp-] * 10 prfx-/ [prp-] * 2 -sfx/[prp-] * 10 prfx- * -sfx/prp- * -sfx * 2 -sfx/[prp-] * 10 prfx- * suppletion/[prp-] * suppletion * 2 -sfx/[prp-] * 10 prfx- * -RR-/ [prp-] * -RR- * 2-sfx $\sim$ Q: 9 -sfx $(6/48 + 6/9)/2 = 0.39$
19. Potential: A: -pp $\sim$ Q: -pp₁/-pp₂/-pp₃/-pp₄ $(1 + \frac{1}{4})/2 = 0.625$
20. Prohibitive: A: prp- $\sim$ Q: prfx-/ -pp₁/-pp₂ $(1+1/3)/2 = 0.66$
21. Reciprocity: A: prfx- $\neq$ Q: -RR¹⁷- 1
22. Repetition: A: -RR-/suppletion/-sfx₁/-sfx₂ $\sim$ Q: -sfx $(1 + \frac{1}{4})/2 = 0.625$
23. Singular: [prp-] * 9 prfx-/ [prp-] * 9prfx- * suppletion $\neq$ Q: 9 -sfx 0
24. Subject: A: [prp-]+ 5 prfx- / 2-sfx $\sim$ Q: 9 -sfx $(2/7+2/9)/2 = 0.25$

VGCI of Ainu and Qiang is the following:

$$(24/38 + 24/40)/2*(11 + 0.5 + 0.75 + 0.7 + 3*0.625 + 0.39 + 0.66 + 0.25)/24 \approx 0.4;$$

It means that Ainu and Qiang are relatives.

Thus, due to transitivity of relatedness, it is possible to state that Ainu is a relative of whole Sino-Tibetan stock.

5.3. Particular Conclusion about Ainu-Andamanese-Sino-Tibetan Stock

5.3.1. Ainu-Andamanese-Sino-Tibetan Stock

Now it is possible to speak about Ainu-Andamanese-Sino-Tibetan stock.

¹⁷ It is possible to say that reduplication can be interpreted as prefixation.

Main structural features of the stock are the following: voices are badly elaborated; often can be seen personal markers; also category of evidence is elaborated rather well.

Qiang is closer to Ainu than to Mandarin.

Mandarin language is a marginal idiom inside the stock since it has well elaborated category of voice and has no category of evidence.

It seems that Mandarin underwent certain influence of Austric languages since Austric languages have a well elaborated category of voice (system of trigger/focuses, see 4.3.2.2).

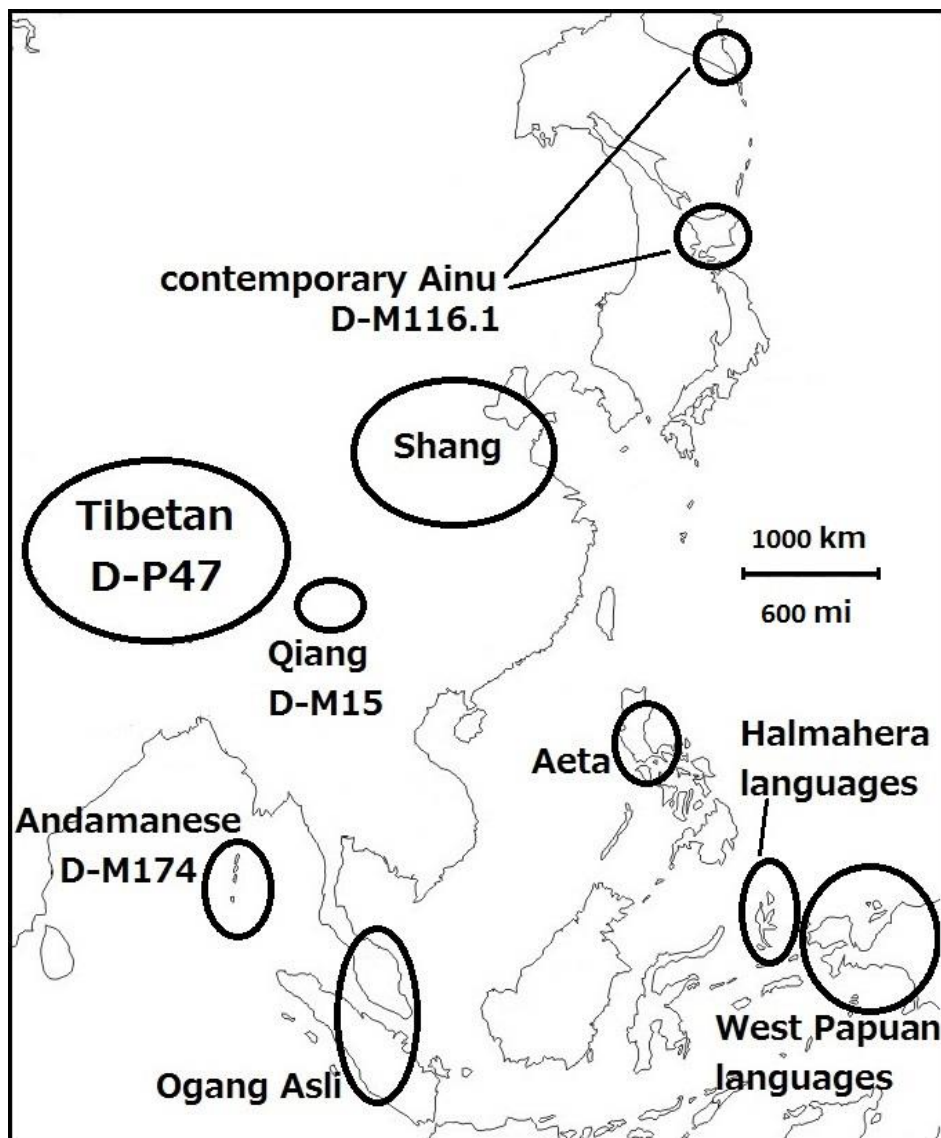


Figure 6. Geographic spread of Ainu-Andamanese-Sino-Tibetan stock; genetic evidences and perspective territories for looking for other relatives of the stock.

5.3.2. *Evidences of Genetics*

Cultures and languages are usually considered separately from the data of genetics, and often can be seen the opinion that cultural anthropology should not use data of genetics. However, I have to note that since languages and cultures are spread not by themselves, but by people so influence of certain culture has to correlate with corresponding genetic traces (Nonno 2016a: 46).

Different subclades of Y haplogroup D-M174 are rather widely spread among people of Southwest China (Xue et al. 2006). The same Y haplogroup can be seen among Ainu people (Tajima et al. 2004) and among Andamanese (Chandrasekar et al. 2007).

It's notable fact that nowadays geographic spreading of languages preserving old features of Ainu-Andamanese-Sino-Tibetan stock correlates with that of Y haplogroup D (Figure 6).

It seems that initially large spaces of Southern and East Asia were occupied by people with Y haplogroup D and they were the first speaker of the idiom that was proto-language of Ainu-Andamanese-Sino-Tibetan stock.

As it has been noted in 5.3.1 it seems that initially Mandarin also was a language with a set of typical features of the stock, but had been undergone serious influence of certain Austric languages; and this hypothesis also correlate well with data of genetics, since there is almost no Y haplogroup D in the plains of China. It seems that people of Y haplogroup D mixed with newcomers who spoke Austric languages and bore Y haplogroup O upon the plains, or were ousted to the mountain where they could save their languages.

5.3.3. *Evidences of Culture*

Ornaments of Ainu textile and those of Shang bronzes demonstrate noteworthy resemblance. Basic element of both ornamental traditions is so called rectangular volute (Nonno 2016b: 54).

5.3.4. *Location of Proto-Language of Ainu-Andamanese-Sino-Tibetan Stock*

Proto-language of Ainu-Andamanese-Sino-Tibetan stock probably located somewhere in South Asia.

5.3.5. *Other Potential Relatives*

Potential relatives can probably be found among West Papuan and Halmahera languages (Figure 5).

Another potential relative is Ongan family. Despite Ongan languages are usually considered as unrelated to Great Andamanese (Abbi 2009), but it seems rather possible that they can be distant relatives.

Also, certain lexical relics can probably be found in languages of so called Orang Asli and Aeta. Despite now they are Austronesian speaking ethnic groups, in their languages there are some words of non-Austronesian origin (Reid 1994).

5.3.6. *On the Origin of Ainu*

Above described facts are firm evidences of southern origin of Ainu. Ainu people seem to be relic of a very large population that was spread throughout South and Southeast Asia in a very distant past.

CONCLUSION ABOUT VGCI METHOD

The basic idea of VGCI method is very simple:

Grammar is first of all positional distributions of grammatical means, i.e., ordered pair of the following view: $\langle A; \Omega \rangle$ where A is set of grammatical meanings and Ω is set of operations (positional distributions) defined on A .

In order to understand whether two languages are genetically related we should analyze the degree of correlation of grammatical meanings sets and to estimate the proximity of positional distributions of common grammatical meanings.

If value of VGCI is about 0.4 or more than 0.4 then languages are related (i.e., belong to the same stock), if value of VGCI is about 0.3 or less than 0.3 then languages are not related. Such values as 0.39 and 0.38 also are variants of 0.4; while 0.31 or 0.32 are variants of 0.3. The more closely are certain languages related, the higher is value of corresponding VGCI.

The more precise is notation the more precise will be conclusions. Current way of notation allows seeing whether languages are related, but obviously it can become more precise.

Good grammars and correct notation are matters of utmost importance in VGCI method. It's better not to estimate VGCI at all rather than estimate it inaccurately. I mean the following: if someone receives VGCI value, for instance: 0.35, it means that there are some serious mistakes in notation or it simply means that grammar simply doesn't describe a language in a sufficient way.

There can be no languages demonstrating such odd values as 0.35; VGCI of any pair of languages is somewhere outside of this "corridor of death" between 0.3 and 0.4.

Actually VGCI allows some backlash, since, as it has been shown, very different descriptions give almost the same values, but VGCI obviously doesn't allow omission of the milestones of grammars.

Set of contentive grammatical meanings of any language is actually rather small: it hardly can count more than 50 elements and hardly can count less than 20. If certain list of grammatical meanings consists of less than 20 elements, then it should cause doubts about the correctness of a particular notation.

Differentiation between syntax and morphology has no real base: it can be especially clearly seen on the material of Austronesian stock: among Austronesian languages there are languages that "look alike" Vietnamese and Khmer (for instance Cham), i.e., from "traditional" point of view have no morphology; there are languages that "look alike" Ainu (for instance Lha'alua), i.e., have well elaborated morphology; and there languages that probably from that "traditional point of view" look alike "Austronesian itself" (for instance Hawaiian); and all these languages that are "so much different typologically" show rather similar positional distributions of grammatical categories. It also means that typology should be not collecting of curiosities, but should be study of positional distributions of all grammatical categories of verb represented in a certain language.

An important consequence from the previous point is the principle that can be conventionally named principle of grammar distribution stability, i.e., degree of synthetism/analytism can changes, morphology can convert itself into syntax or vice versa, but positional distributions of most important grammatical categories remain the same.

Unrelatedness of languages can be proved; anyone who states that it's impossible just steps outside of basic logic and outside of science.

VGCI can be extremely perspective in Americas, New-Guinea and Australia, i.e., in those areas where exist many languages which genetic affiliation is doubtful or simply unknown.

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Chapter 17

**ACADEMIC LITERACY ADAPTATION IN THE
INTERNATIONAL GRADUATE STUDENTS’
USE OF LEXICAL BUNDLES THROUGH
CORPUS RESEARCH**

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ABSTRACT

More and more international students come to the United States to study in higher education. Due to the increasing number of the population, international students are considered crucial for the economic and social impact on academia in the U.S. For instance, they have contributed more than 30.8 billion dollars to the economic vigor of the U.S. higher institutions and their communities. However, international students’ adaptation may not be successful due to several reasons. One of them would be their language proficiency—in particular, productive language skills: writing and speaking. In the academic setting, many international students struggle with their written assignments in English. Acknowledging the international students’ challenge of academic writing in English, this study investigated international graduate students’ academic literacy adaptation via corpus research. The use of lexical bundles was examined as one of the academic literacy adaptation indicators in this corpus-based study. The results revealed that the students did not use stance lexical bundles, indicating that they may not express their own voices in critical reviews. Rather, they tend to write carefully to reflect the original articles. This study suggests that we should view international students’ academic literacy adaptation with larger corpus data. Further implications of the findings are discussed.

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1. INTRODUCTION

Prior research (e.g., Cheng & Fox, 2008; Spack, 1997) shows that a lot of international students face challenges in their adaptation process while studying in a foreign country. More and more international students come to the United States to study in higher education. According to *Open Doors 2016*, the number of international students studying in the United States grew by 7.1% over the prior year in 2015-2016 and was at a record high; international students constituted approximately 5.2% enrolled in the total U.S. higher education student population in the year 2015-2016 (“Institute of International Education,” 2016). The increasing population of international students has brought social and economic influence on higher education in the U.S. Their contribution to the U.S. higher education also includes providing a wide range of viewpoints in the U.S. classrooms.

In spite of the benefits that international students bring to higher educational contexts, the academic adaptation may not be reached to their expectation. For example, Park’s (2016) study showed that the participating international graduate students perceived that their sociocultural adaptation was agreeable with 93 percent of positive responses. The international graduate students seemed socially and culturally adjusted well to the target culture and society. However, the dimensions of academic adaptation and academic literacy adaptation yielded lower percentages (77.88% & 68.17% respectively). This indicates that international students have difficulty in academic adaptation and especially the adaptation of second language writing. Realizing international students’ challenge of academic writing in English, this study investigated international graduate students’ academic literacy adaptation via corpus research. In particular, this study focused on the international students’ lexical bundle use. To better understand the nature of their language use and assist them to improve their English language skills, it is necessary to examine how international students receive the input and yield the output via second language writing. In this sense, lexical bundles can manifest the extent of academic literacy adaptation. Thus, this study poses the following research questions:

1. What structural characteristic of lexical bundles are included in the participants’ second language writing?
2. What functional characteristics of lexical bundles are included in the participants’ second language writing?
3. Which features of lexical bundles used by the participants show academic literacy adaptation in second language writing?

2. LITERATURE REVIEW

2.1. Academic Adaptation through Second Language (L2) Writing

A growing body of literature of academic adaptation of international students, whose first language is not English, in higher education has focused on second language learners’ processes of engagement in the university settings (e.g., Cheng & Fox, 2008; Ivanič, 2006; Leki, 1995, 2007; Morita, 2000; Spack, 1997). Spack’s (1997) longitudinal case study

explored one international undergraduate student's reading and writing strategies in the U.S. academic context. The study analyzed multiple data sources, including interviews, observations, and texts from the participant's courses, and examined the linguistic, cultural, and educational factors of the participant's learning in a second language. The results revealed an inseparability of reading and writing processes and the participant's strategy of applying previous literacy skills to new course materials. Spack's (1997) study also implied that the educational background is closely related to academic discourse practices and rhetoric. Leki's (2007) study is another exemplary research on language and literacy learning experiences of immigrant and international students throughout their entire undergraduate careers. In the multiple case studies, Leki (2007) argued that ESL composition courses may not be related to students' experiences of academic language and literacy in the U.S. academic setting and that L2 writing classes should provide international students with an opportunity to develop literacy skills and to learn academic strategies to overcome challenges of international students in academic adaptation. Cheng and Fox's (2008) study explored how international students were successfully engaged in the academic setting and developed more strategic learning and social skills as part of their adaptation process. The study examined factors of the participants' academic adaptation and a role of English for academic purposes (EAP) instruction as a mediator of academic adaptation processes. A grounded theory approach was employed in analyzing the responses elicited by semi-structured interviews with L2 students studying in three Canadian universities. The findings revealed that L2 students felt burdened in the new academic and cultural communities. A major issue was a mismatched agenda. Students' expectations and needs do not often meet the ones within their universities. For this reason, successful academic adaptation may not take place with language or disciplinary learning alone. Academic adaptation is such a complex process in international students' personal, social, intellectual, and cultural lives and cannot be a one-way communication from specialists in a target community to novice learners. As Cheng and Fox (2008) indicated, an adaptation process is so complicated and vibrant that second language researchers should investigate international students' academic adaptation processes with different perspectives.

2.2. Lexical Bundles as a Part of Academic Literacy Adaptation

Language is considered as formulaic in nature (Ellis, Simpson-Vlach, & Maynard, 2008; Sinclair, 1991). Formulaic language is significant in academic writing (Biber, Johansson, Leech, Conrad, & Finegan, 1999). Lexical bundles are the most frequent sequences of words in a language (Biber, et al., 1999), considered as a subcategory of formulaic language. Qin (2014) asserted that the appropriate usage of formulaic language leads second language learners to keep their identity in a disciplinary community. Many corpus researchers (e.g., Biber, et al., 1999; Cortes, 2004; Sinclair, 1991; Stubbs & Barth, 2003) have examined lexical chunks in texts and indicated that there are patterns of the lexical bundle use across different registers—academic prose, fiction, and conversation (Biber et al., 1999; Stubbs & Barth, 2003). Ellis, Simpson-Vlach, and Maynard (2008) also claimed that formulaic language provides meaningful implications: (1) a high utility of formulaic expressions, (2) the integration of formulaic language into the learning curriculum, (3) the determination of learnability and processing fluency, and (4) needs-based developmental instruction of

formulaic language. Second language researchers (e.g., Carroll, 2002; Harris, 1989; Hyland, 2009; Leki, 2007) maintained that adapting to the rhetorical styles and writing expectations of different disciplines is crucial in learning to gain membership in academia. Hyland (2008a) believes that second language learners become familiar with lexical bundles by participating regularly in the target community. They will be able to ultimately obtain a natural language use and reach a qualified language use.

Despite a useful indication of academic adaptation, lexical bundles have been disregarded due to the nature of incompleteness (Conrad & Biber, 2004). However, Hyland (2008b) maintained that lexical bundles are a key way of “helping to shape text meanings and contributing to our sense of distinctiveness in a register” (p. 5). Qin (2014) also affirmed that explicit instruction is necessary for the attainment of the lexical bundle use. Future research on lexical bundles is critical in diverse registers so that the research can be applied to second language writing pedagogy.

3. METHODS

3.1. Research Design

This study is based on corpus-based research. The research site was the English as a Second Language (ESL) Programs at a Mid-western university in the U.S. A textual analysis was employed for identifying the participants’ writing patterns in a learner corpus with regard to lexical bundles in corpus research.

3.2. Sample

This study used convenience and purposive sampling. With the approval of the ESL Program Office, two graduate composition classes were assigned and selected according to the researcher’s criteria (i.e., international graduate students) as purposive sampling. During the observation period for the research, three participants were selected for this study. Their participation was voluntary. The participants’ demographic information is provided in Table 1.

Table 1. Participants’ demographic information

Participant*	Gender	Nationality	Age Band	Pursuing Degree	Field of Study	Years in the U.S.
Hoon	Male	Korean	30-32	PhD	Architecture	10 months
Jisoo	Female	Korean	27-29	PhD	Nursing	10 months
Liwon	Female	Korean	33-35	MA	Education	10 months

* All the participants’ names are pseudonyms.

3.3. Instrumentation

The three participants’ final written products were collected and used for this study. The students’ final product was a critical review on a topic of their own choices from the

individual field of study. The length of the final product varied, but the students in the composition classes had to write at least 4,000 words with an appropriate format of critical literature reviews. The learner corpus data of the three participants included 12,941 words.

3.4. Data Analysis

Corpus researchers (e.g., Granger, Kraif, Ponton, Antoniadis, & Zampa, 2007; Nesselhauf, 2004) claimed that native corpora may not uncover learners' difficulty in second language writing. Learner corpora, however, can reveal specific challenges and difficulty in speaking or writing. Grander et al.'s (2007) study showed that learner corpora enable researchers to identify characteristics of a learner language by separating it from the target language. Hence, it is applicable to use a learner corpus for investigating international students' academic adaptation through second language writing. The data analysis began with clearing the corpus text without any non-text components (e.g., graphics, formulas, page numbers, references, tables, and figures) aligned with the requirement of *AntConc* software (Version 3.4.4) (Anthony, 2015). To analyze structural and functional characteristics of lexical bundles, the function of clusters/N-Grams was utilized in identifying four-word lexical bundles and clarifying whether they did not overlap in the *AntConc* software program.

Bal (2010) considers *AntConc* as a resourceful analysis tool for both quantitative and qualitative data in research. In the *AntConc* software, the N-Grams function enables the researcher to identify the count of “*n*” from the uploaded corpus. After a list of four-word bundles was extracted, I manually checked each lexical bundle whether it overlaps with other lexical bundles. Lastly, retrieved four-word lexical bundles were categorized into similar grammatical structures and functions based on their use and meanings in context by comparing the structural and functional taxonomies (Biber et al., 1999). Bal (2010) suggested that a second rater may assist the identification and classification of the lexical bundles for reliability of the data analysis.

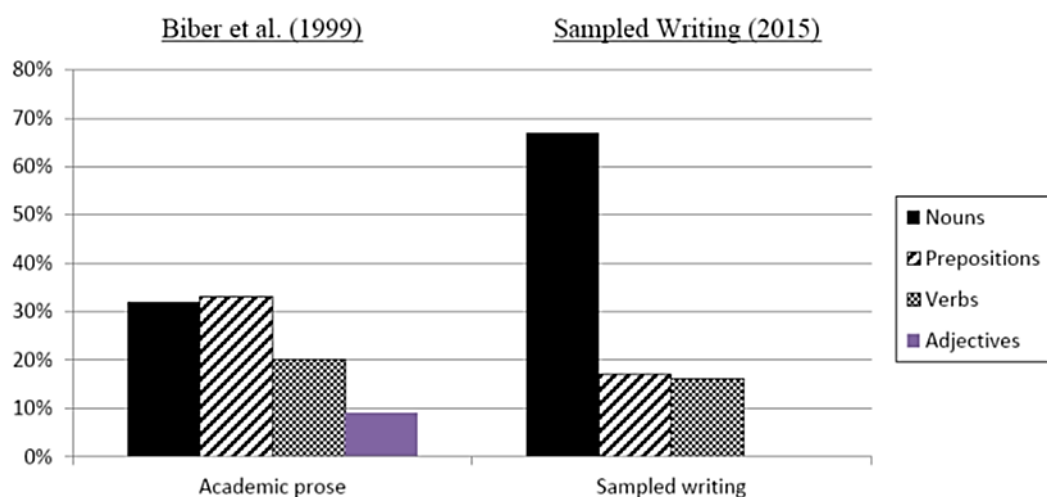


Figure 1. Percentage distribution of nouns, prepositions, adjectives, and verbs between academic prose and students' writing samples.

4. FINDINGS

This section includes structural and functional characteristics of lexical bundles from the participants' corpus data.

4.1. Structural Characteristics of Lexical Bundles

To identify academic literacy adaptation from students' writing, structural features of lexical bundles were analyzed. The proportions of structural patterns in graduate international students' writing were compared to the ones in academic prose in Biber et al.'s (1999) lexical bundle project. Biber et al.'s (1999) project revealed that proportions of structural patterns in the academic prose include noun phrases (32%) and preposition with noun phrase fragments (33%). The present study uncovered a somewhat different trend from Biber et al.'s (1999) work. It showed 67 percent of noun phrases, taking up two-thirds of the entire bundles; 17 percent of preposition with noun phrase fragments. Another major structural pattern involved content-focused compound noun phrases, containing two or more words to make a single noun (23%) in international students' writing. Furthermore, specific disciplines of study, such as nursing and architecture, use technical terms (e.g., *the cell cycle regulation*) very frequently, with frequency counts of 15. Other structural patterns, such as anticipatory it + VP/-adjective phrase (+ complement clause) and passive verb + prepositional phrase fragment, have a similar trend to Biber et al.'s (1999) patterns. The rest of the three structural patterns, such as pronoun/NP (+ auxiliary) + copular be (+), (verb +) that-clause fragment, and (verb/adjective+) to-clause fragment, are not found in this study. This limited information would be because critical reviews were the only input of the written register, and the sample size is very small—three critical review papers with 12,941 word tokens.

4.2. Functional Characteristics of Lexical Bundles

This study yielded 39.82 percent of the functional use in the students' written register as the preliminary findings. Biber et al. (1999) highlighted three primary functions of lexical bundles in the registers: 1) stance bundles, 2) discourse organizers, and 3) referential bundles. Stance bundles refer to attitudes or assessments of certainty representing other propositions (e.g., *I do not know, I do not think*). Discourse organizers are relationships between preceding and forthcoming discourse (e.g., *what do you think, you know I mean*). Referential bundles indicate direct references to the textual context to identify a particular attribute of the entity (e.g., *one of the things, in terms of the*).

Two types of functions (i.e., stance and referential bundles) are found in the study. The proportion of attitude/modality stance, specifically with an obligatory function, comprises 6.48 percent with seven frequency counts (e.g., *it is necessary to*). The proportion of referential bundles with the function of place takes up 12.04 percent with 13 frequency counts (e.g., *in the cell cycle*). The proportion of referential bundles with tangible framing attributes takes up 21.30 percent with 23 frequency counts (e.g., *the impact of urban form, the development of PTSD, phenomenon of post ICU-PTSD*). 60.18 percent of the rest of lexical

bundles are all content-oriented combinations. For example, the most frequent bundle is 'the cell cycle regulation' with 15 frequency counts (13.89%).

4.3. Academic Literacy Adaptation through the Participants' Use of Lexical Bundles

Academic literacy adaptation was examined with structural and functional characteristics of lexical bundles in the participant's academic writing. First, the analysis of structural features showed that nouns are the most frequently used part of speech patterns, reflecting that the written registers pursue the primary informative purpose of writing; that is, critical reviews. Compared to the academic prose in Biber et al. (1999), nouns are much more common than other parts of speech (i.e., adjectives and verbs) in the students' writing samples.

For the functional characteristics, the analysis revealed that international graduate students tend to use a lot of technical terms from the previous literature focusing on unique disciplines when they write critical reviews. Nine out of 14 types of lexical bundles were topic-specific bundles. For example, *cell cycle regulation* and *in the cell cycle* are technical terms in the discipline of nursing, regardless of any lexical functions.

Table 2. The summary table of lexical bundles in the corpus of the final critical review papers

Lexical bundles	Structure	Function	Frequency	%
the cell cycle regulation	NP	Topic-specific	15	13.88
in the cell cycle	PP	Referential-place	13	12.04
impact(s) on travel behavior	NP	Topic-specific	11	10.18
impact of urban form	NP	Referential-framing attributes	9	8.33
the development of PTSD	NP	Referential-framing attributes	8	7.41
form on travel behavior	NP	Topic-specific	7	6.48
it is necessary to	VP	Stance- obligation	7	6.48
involved in the cell	VP	Topic-specific	6	5.56
of the cell cycle	PP	Topic-specific	6	5.56
phenomenon of post ICU-PTSD	NP	Referential-framing attributes	6	5.56
RB/E2F pathway and dream complex	NP	Topic-specific	5	4.63
of the development of	PP	Topic-specific	5	4.63
solve the problem of	VP	Topic-specific	5	4.63
three argumentative organizational plans	NP	Topic-specific	5	4.63
Total	14		108	100
Total word tokens: 12,941				

5. DISCUSSION

5.1. Lexical Bundles as an Indicator of Academic Literacy Adaptation

Lexical bundles were investigated through corpus research to find out whether lexical bundles indicate academic literacy adaptation. In other words, the use of lexical bundles may be a potential indicator of international students' academic literacy adaptation. Lexical bundles include two characteristics: structural and functional (Biber et al., 1999). In terms of structural features, the participants' lexical bundles were found to follow the trend of the most frequent used noun phrase fragments from Biber et al.'s (1999) work. In particular, topic-specific compound noun phrases were most frequently used due to a certain written register; that is, critical reviews. Thus, the writing samples tend to exhibit the information about the specific expertise from previous literature.

As for the functional use of lexical bundles, two types of functions (i.e., stance and referential bundles) were found with 43 frequency counts (40%) among the 108 lexical bundles. Discourse organizing bundles were not found, but this may be attributed to the small sample size. In Biber's (2006) study, the proportion of discourse organizing bundles in the registers of textbooks and academic prose is far less than conversation and classroom teaching. Hence, it may be natural that no discourse organizing bundles existed in such a small corpus with 12,941 word tokens. The functional use of lexical bundles was not represented as meaningful in the findings due to the small sample size. However, it may be true that the students may not express their own voices in critical reviews due to no use of discourse organizing bundles. Rather, they are likely to write carefully to involve the original articles with sincere understandings. This also shows their academic adaptation regarding the rhetoric: international students' tendency to veil their stance or arguments in critical reviews. To make this study meaningful, it is needed to accumulate more writing samples to represent international students' academic literacy adaptation.

6. LIMITATION

Several limitations need to be addressed for enhancing future research. First, this study examined academic literacy adaptation with the small size of the learner corpus. Since the sample size is relatively small, the results cannot be generalizable. With the small sample size, the corpus data were also too small to be analyzed or interpreted for the legitimate proposition. Second, the duration of the research was short in collecting the students' written product and observing their writing patterns. If the corpus data were accumulated in a longer period of time, it would be possible to retrieve more representative findings. Finally, pre- and post-observations of lexical bundles could have revealed a more logical connection between academic literacy adaptation and the use of lexical bundles. For example, it would have been optimal to compare their initial writing products at the beginning to the final writing products at the end of the research.

CONCLUSION

The significance of the research is to understand the international graduate students' academic literacy adaptation through corpus research. This study provides potentials for researchers to implement corpus research to explore academic literacy adaptation by examining lexical bundles, a linguistic component in a language. Despite the small sample size, the study yielded structural (67% of noun phrases) and functional (39.82% of stance and referential) features, and this uncovered some trend of international graduate students' academic literacy adaptation.

Future research needs more improvement. First, more samples are necessary in developing valid and reliable corpus research so that the results can be representative and generalizable. Second language writing samples should be accumulated for significant contributions to the corpus research. Furthermore, examining different genres of writing and registers (i.e., spoken and written) would provide a lot clearer essence of lexical bundles in second language writing. The future research should also connect the information and knowledge of lexical bundles to second language learning instruction and pedagogy. Qualitative research may help uncover in-depth understandings of international students' academic adaptation with qualitative-oriented research techniques, such as observations, field notes, interviews, and verbal protocols, which should be practically employed for yielding valuable research findings.

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Chapter 18

**MULTISEMIOTIC ANALYSIS OF ORTHODOX
PATRIARCHS' PHOTOGRAPHS:
CROSS-CULTURAL (INDIAN AND RUSSIAN)
DIFFERENCES IN INTERPRETATION OF
INTERACTIVE MEANINGS**

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ABSTRACT

The paper investigates the role of the implementation of the multisemiotic theory through the analysis of the Orthodox Patriarchs' photographs. The research is based on the multisemiotic theory by Kress and van Leeuwen and supports the view that semiotic codes are used in specific historical, cultural and institutional contexts. It is customary for people to communicate the meaning referring to various codes, depending on the contexts, as codes are not only planned, taught, justified, but also criticized. The authors of this paper make an attempt to prove the hypothesis that Russian and Indian respondents code similar photos differently due to their cultural/ideological backgrounds. According to Kress and van Leeuwen, pictures are images that convey an interactive meaning. Thus, the main focus of the research is on the image viewer interaction. The present study examines the data obtained from 526 official photographs of the Patriarchs and consists of several stages. At the first stage two groups of coders (Indian and Russian) were created. The selected groups were provided to code the collected corpus of photos (in total 526 photographs) autonomously. In case of discrepancies between the

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coding images, the agreement was terminated by two national coders collaboratively. At the second stage, the semi-structural interviews with the coders were conducted. The interviews allowed to identify and reveal similarities and differences in photo perception. The results of the study show, that the multisemiotic theory can be entirely employed and serve as an effective tool in image analysis within different cultures through identifying the interpersonal (interactive) metafunction. As the research demonstrates limitations like small amount of studied samples and a low number of Indian participants' opinion provided in the Russian Federation, further research in India is recommended.

Keywords: multisemiotic theory, interpersonal (interactive) metafunction, cross-cultural differences, Orthodox Patriarchs' photographs

1. INTRODUCTION

The current paper explores the characteristic features of the interactive meanings of the Orthodox Patriarchs' photographs. In this respect Kress and van Leeuwen state that "The interactive meanings are visually encoded in the ways that rest on competencies shared by producers and viewers" (Kress & van Leeuwen, 2006: 115). The photographs' interactive meanings may partially change not only the viewers opinion in image perception, but also, to some extent, social representation of the church ideology. In order to apprehend why some photographs are more amiable than the others, producers and viewers' intentions and interpretations have to be identified and considered compulsively.

Although the interactive meaning is a common concept of interaction with many social science, for example, sociology or systemic functional linguistics (SFL), it has often been distinguished as being related to the interpersonal metafunction (see Halliday & Matthiessen, 2014: 30). The SFL approach shares the overriding assumption that "We use language to make sense of our experience, and to carry out our interactions with other people. This means that grammar has to interface with what goes on outside language: with the happenings and conditions of the world, and with the social processes we engage in. But at the same time it has to organize the construal of experience, and the enactment of social processes, so that they can be transformed into wording" (Halliday & Matthiessen, 2014: 25).

It is claimed that modern pragmatics is not limited by reflecting society and language in contrast with events and social processes. However, the new perspective called "embodiment" and the role of the human body are being disadvantaged (see Lakoff & Johnson, 1980). The embodiment approach confirms that a human body is mostly accepted identically throughout the world. This fact predetermines a lot of questions and creates a new scope for the cross-cultural research. Recent developments have shown an increased interest in the embodiment of photographs and have highlighted it as one of the primary objectives for further investigation. So, the current study shares the view that the cross-cultural differences in identifying the interactive meanings can be fully explained in terms of the SFL-based multisemiotic theory, similar to Kress and van Leeuwen theory. The controversy about embodiment is connected with the process of distinguishing a human body as cultural and social product, because society and social institutes dictate the patterns of behaviour and draw boundaries for body perceptions.

Thus, this paper claims to apply and illustrate Kress and van Leeuwen multisemiotic theory's analysis of the Orthodox Patriarchs' photographs within the context of Indian and Russian cross-cultural study. The topicality of the research concerns the theoretical application and the data set. Theoretical significance is revealed in the attempts to apply western - origin multisemiotic theory to two selected types of non-western perceptions of the Orthodox Patriarchs' photographs, using a model for the analysis of interpersonal metafunction of images. The concern expressed by Kress and van Leeuwen is related to the relevance of application of the multisemiotic theory in non-western environment (Kress & van Leeuwen, 2006:3). It can be argued that a similar approach to sociological content analysis assumes that standardization of procedures and control of inter - rater reliability can give information about differences and similarities in cross-cultural perception (see e.g., Yadov, 2007). The corpus data of this paper comprises 526 photographs dealing with the specialized topic called Orthodox Church Patriarchs' activity. The significance of statistical information is proved by the expanded corpus sample.

The selection of Patriarchs' photos as a material for the research can be explained by the similarity in the tendencies to expand both on the part of Christian and Orthodox Churches (see e.g., Foundations of Social Concept of the Russian Orthodox Church, 2000). However, the mission policies of the Constantinople and the Moscow Orthodox Church Patriarchate are distinct (see e.g., The Nature and Mission of the Church, 2011). For example, The Moscow Patriarchate is sensitive towards its territorial issues, while the Constantinople Patriarchate supports the external mission. As the result, Australian Orthodox Church (ROCOR, 2016) has recently opened several Orthodox Church Associations in India (see Pavlenkov, 2015). Therefore, it comes out of question that Indians might have different perception of the Orthodox concepts and specific attributes, including icons, images and photographs. Aimed at establishing new contacts between India and Russia, the Indian Orthodox community in Bangalore addresses the authors of the article to conduct a preliminary study devoted to the comparison of Indian and Russian perceptions of the Orthodox Patriarchs' photographs.

This study is not aimed at and does not put much emphasis on the Orthodox icons identification, since the icons are recognized entirely as church possessions and attributes. The newly involved church members always have an opportunity to be familiarized with the icons as soon as the interest to Orthodox Church arises. The study is limited by the selection of photographs available in the media sources. They are usually photos of the Patriarchs as the main church officials.

As the main focus of the present paper is on Russia but not India, this explains the importance to examine the differences in the photos' interactive meaning perception placed in Russian environment. Moreover, Indians in Russia are familiar with Russian culture and do not need to gain extra knowledge or undergo educational or explanatory procedures on what the Orthodox Church is. In addition, Indians are considered as leaders, that have already adjusted to Russian environment, and in this relation can be viewed as an advanced group. The mentioned factors stress the importance of the current paper research.

Thus, the primary aim of the study is related to the multisemiotic analysis of the Orthodox Patriarchs' photographs with regard to the cross-cultural (Indian and Russian) differences in identifying the interactive meanings. Two main objectives have been determined.

Objective 1 focuses on the detection of the evident similarities and differences in the Indian and Russian perceptions of the interactive meanings of the Orthodox Patriarchs' photographs;

Objective 2 focuses on the analysis, to what extent the differences in the Indian and Russian perception of the interactive meaning can influence the description of church ideology represented in the Orthodox Patriarchs' photographs.

The *hypothesis* of the study is that Russian and Indian coders can code/decode photos distinctly because of the peculiarities of cultural/ ideological backgrounds. In terms of statistics, it means that the level of agreement in the homogeneous Russian or Indian group of coders is higher than in the mixed Russian and Indian group of coders.

2. THEORETICAL BACKGROUND

The photo analysis is considered to be a quite complex process despite the assumed simplicity in processing and interpreting photos. "Photographs are often used to bring a sense of immediacy and reality to the text in a way that promotes interaction with the reader" (Martínez Lirola, 2006: 253). Moreover, it is difficult to describe the meaning of the photos applying analytical and research tools. This is explained by the lack of discussions conducted around the social and linguistic meaning of the photos, and little attention is drawn on the part of the social researchers. Roland Barthes supports the concern and lists some reasons for the analysis of "the air of a face": "The air of a face is unanalyzable (once I can decompose, I prove or I reject, in short I doubt, I deviate from the photograph, which is by nature totally evidence: evidence is what does not want to be decomposed)" (Barthes, 1981: 107-109).

Roland Barthes's contribution has been taken as a basis for the further investigation of the photographs as multimodal social phenomenon. Speaking about "the ways in which the meanings of photographs have been framed and adjudicated", John Tagg notes that these ways are tightly connected with "the institutionalized function of the photograph as a privileged form of evidence which has been so important to certain processes of power" (Tagg, 2009: XV-XVI). From this point of view, the social aspects of the photographs cannot be examined in isolation from their ideological function. To some extent, it is a focus on ideology that recognizes the power hidden in the photos (Breckner, 2008; Schill, 2012).

In Russia there are few studies that take the similar stance. The first reason is that through the decades Russian scientists have been researching the photos of Soviet leaders with the evident reflection of the Soviet ideology (see e.g., Ventsel, 2010; Oreh, 2012). Moreover, it is generally thought that Soviet and Russian photos have been considered as the main source of power and social phenomenon. The vast majority of the research papers confirm (Pavenkov et al., 2014), that ideology is an important factor of human perception. However, there is a drawback of the researches of that kind, which is hidden in the subjectivity of interpretation. Finally, until the end of the 1990s, the majority of social researchers considered photos as material with potential gaps and weaknesses for the scientific analysis, material that lacks academic integrity, science capability and information.

In contradiction with the mentioned works that identify the ideology of the photos directly and literally, social semiotics focuses on the description of "semiotic resources" (Jewitt & Oyama, 2001: 134). Social semiotics argues that the key value of the visual

resources is an ability to reproduce the potential meanings. Accordingly, resource description is not a description of the single meaning; it is a description of the limited set of possible meanings that are created by the authors and the viewers during their participation in the process of image interpretation (Jewitt & Oyama, 2001: 135).

Kress and van Leeuwen achievements in photo analysis make the scientific breakthrough in the image processing (see e.g., Kress & van Leeuwen, 2006). The scientists have developed and offered methodological tools which investigators can apply to define, extract and explain the photo meanings. While expanding the research conducted by the linguist Michael Halliday, Kress and van Leeuwen argue that the visual mode must perform certain visual and communicative metafunctions: ideational, interpersonal and textual (Kress & van Leeuwen, 2006: 42-43). Employing various visual elements, an image-producer influences the way a viewer has to eye a photograph or a picture. Ideational and interpersonal metafunctions highlight characteristics of the composition while the textual metafunction gives the possibility to explore the overall composition of the image (Kress & van Leeuwen, 2006: 40-42).

Kress and van Leeuwen have noted (2006: 14) that they seek the regularity in the usage of the different visual elements in visual communication systems. Thus, the primary goals of their investigation are not simply aimed at revealing the reasons of the usage. Respectively, Kress and van Leeuwen believe that each image contains the expression of ideological positions, and cannot be considered as an objective image of reality (2006: 14). It means that serious cross-cultural differences in interpretation are possible. In their reports, Kress and van Leeuwen point out: "Meanings belong to culture, rather than to specific semiotic modes" (Kress & van Leeuwen, 2006:2). They either write the following: "In the book we have, by and large, confined our examples to visual text-objects from 'Western' cultures" (Kress & van Leeuwen, 2006:3).

Taken above said into consideration the following question arises, whether it is possible to apply the multisemiotic theory to the analysis of the Orthodox Patriarchs photos, which are the product of Russian culture and Russian perception. More than that, the Indians involved in the study are also considered as representatives of non-Western cultures. However, soon after establishing the west-oriented direction and the nonuniversality of their visual grammar, Kress and van Leeuwen suggest that in spite of the specific cultural setting it can bring some benefit to non-Western cultures (Kress & van Leeuwen, 2006:3).

In respect of ideology, it can be said that, due to the perception varieties, photos in distinct cultures may establish different ideology. If the Russian photographer supposes to convey a certain meaning, the result may be completely different in another culture and the photo might create an unexpected ideology. Therefore, photos' ideology is not a constant but provides the meaning potential where "the meaning potential is the range of significant variation that is at the disposal of the speaker" (Halliday, 1971: 171).

Since the present paper hypothesis assumes that the Russians and the Indians perceive photos differently, the current study is focused mainly on the interaction between a viewer, a producer and photos' represented participants that focus on the interpersonal metafunction. M.A.K. Halliday was the first linguist who described the interpersonal metafunction (see Halliday and Hasan, 1985, Halliday 1978, 1985, 2003, 2014). He proposes that "Language is always also enacting: enacting our personal and social relationships with the other people around us" (Halliday & Matthiessen, 2014: 30). According to Halliday, "We inform or question, give an order or make an offer, and express our appraisal of or attitude towards

whoever we are addressing and what we are talking about. This kind of meaning is more active, this is language as action. We call it the interpersonal metafunction, to suggest that it is both interactive and personal” (Halliday & Matthiessen, 2014: 30).

Relating to the image, the interpersonal metafunction is shown through the relationship between the represented participant(s) and the viewer/reader. Furthermore, the relationship is established between the image producer and the viewer. In other words, a creator (an author) of an image may code how the viewer has to watch this image and its represented participant(s). Kress and van Leeuwen call the creator and the viewer as “interactive participants”. Interactive participants are “real people who produce and make sense of images in the context of social institutions which, to different degrees and in different ways, regulate what may be 'said' with images, and how it should be said, and how it should be interpreted” (Kress & van Leeuwen, 2006: 114). At the same time, “Producer and viewer know each other and are involved in face-to-face interaction, as when we take photographs of each other to keep in wallets or pin on pinboards. But in many cases there is no immediate and direct involvement. The producer is absent for the viewer, and the viewer is absent for the producer” (Kress & van Leeuwen, 2006: 114).

As the result three types of relations between the participants are established: “(1) relations between represented participants; (2) relations between interactive and represented participants (the interactive participants’ attitudes towards the represented participants); and (3) relations between interactive participants (the things interactive participants do to or for each other through images)” (Kress & van Leeuwen, 2006: 114). The identified relationships can be studied with the help of the relatively simple indicators, that are reflected in the photos and create the interactive meanings. They are *contact*, *social distance* and *attitude* (see Figure 1).

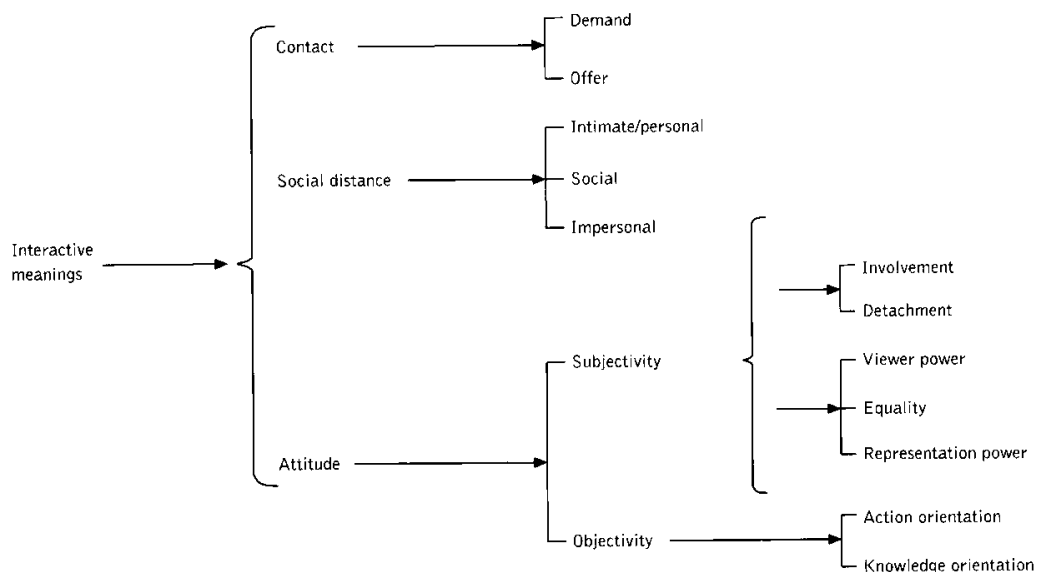


Figure 1. The interactive meanings in images (Kress & van Leeuwen, 2006:149).

1. *Contact*. Usage of the “view” (gaze) assists in establishing relationships between the viewer and a certain person in the image. The concept of the contact is particularly

important for the research because the prevailing majority of photographs or picture books may contain the image of a person. In this context, the view is understood as a situation where the portrayed person looks directly at the viewer. Kress and van Leeuwen (2006: 122) assert that the depicted person addresses the viewer directly and requires something from him/her. The specific nature of the established relationship between the depicted person and the viewers depends on additional information obtained by the other methods (e.g., facial expression or gestures). What is more, the gaze which is directed at something else in the image but not at the viewer is also significant. In this case, the viewer can observe the person indifferently without personal involvement excluding relationship or interaction. Thus, the "contact" can be encoded as "demand" or "offer". For the coders "demand" can be indicated as "gaze at the viewer"; "offer" as "absence of gaze at the viewer" (see Kress & van Leeuwen, 2006: 148).

2. *Social Distance*. Social distance is described as a physical distance between the depicted people and the audience. It means that physical distance is the size of the object in the image that creates visual impression of the distance spread from the viewer to the object. Physical intimacy is established with the audience, similar to people in real life. Physical intimacy represents social proximity, close relationship between the viewer and the object.

People in the photos are often put into and associated with particular locations (e.g., the Patriarch in the Church, meeting of the Patriarch and the Pope at the airport), consequently the photographs are likely to indicate the location. The visual representation of the location distinguishes between the foreground, that means being more prominent or more salient, and the background, that means being less prominent. To illustrate this, the objects in the locations can be of different shapes and sizes. Photographs usually demonstrate not only singularity or plurality of the objects but their interaction. Eventually, three locations or three distances are known as:

1. The close distance shows the situation and the objects with the viewer involved into.
2. The middle distance supposes that the situation and objects are shown in overall dimension without much space around them.
3. The long distance where the situation and objects are shown for contemplation only.

Kress and van Leeuwen offered the following respective types of "distance": intimate/personal, social or impersonal. Intimate/personal distance or close personal distance is the distance at which "one can hold or grasp the other person and therefore also the distance between people who have an intimate relation with each other" (Kress & van Leeuwen, 2006: 124). Social distance or far personal distance is the distance at which subjects of personal interests and involvements are discussed (Kress & van Leeuwen, 2006: 124). Impersonal distance is "public distance" (Kress & van Leeuwen, 2006: 125). In the process of coding the photos "distance" can be encoded as intimate/personal, social or impersonal. For the coders intimate/personal distance can be indicated as "close shot", social distance as "medium shot", impersonal as "long shot" (see Kress & van Leeuwen, 2006: 148).

3. *Attitude*. An attitude represents the structure that is complex and includes subjective and objective setting (see Figure 1). Subjectivity attitude includes two groups of indicators:
 - Involvement and Detachment;
 - Viewer power, Equality and Represented participant

An objectivity attitude refers to “scientific and technical pictures, such as diagrams, maps and charts” (Kress & van Leeuwen, 2006: 143) and is not considered in the current research.

Involvement and Detachment

Kress and van Leeuwen contend, that the horizontal point of view determine the level of involvement and detachment in the created image both on the part of the producer and the viewer. The level of involvement is established with the help of the angles that fall into different groups. Consequently two basic types of angles are identified:

- a) Horizontal angle is “the function of the relation between the frontal plane of the image-producer and the frontal plane of the represented participants” (Kress & van Leeuwen, 2006:141). These relations can be parallel or form an angle. Kress and van Leeuwen suppose that the frontal angle acts similar to “what you see here is part of our world, something we are involved with” (2006: 143). The frontal angle is an angle of maximum involvement. It is oriented towards the action (Kress & van Leeuwen, 2006: 145).
- b) The concept of “oblique points” from Kress and van Leeuwen’s point of view can be stated like “What you see here is not part of our world, it is their world, something we are not involved with” (2006: 143). In the process of coding photos in this paper, “*involvement*” can be indicated as “*frontal angle*” and “*detachment*” can be indicated as “*oblique angle*” (see Kress & van Leeuwen, 2006: 148).

Viewer Power, Equality and Represented Participant Power

One of the aspects of the photo analysis is the connection between the represented participants, here the Patriarchs, and the observer, called perspective. The use of the perspective includes two practical tasks:

1. Selecting a certain frame size which in practice involves selection of an angle, called the point of view.
2. Welcoming the possibility of expressing the subjective attitudes which presupposes the personal evaluation of the viewers toward the action of the represented participants (Kress & van Leeuwen, 2006:135).

The angle in the current paper deals with the notion of power, ignoring the notion of involvement. This angle is known as vertical angle and within it we have to look at the low angle, the high angle, and the eye level. The high angle makes the observed subject small and

insignificant. High angles tend to diminish the individuals and humiliate them morally by reducing them to the ground level in an insurmountable determinism (Martin, 1968: 37-8). If the represented participant is viewed from a high angle or from up to down, it means that the viewer has power over the represented participant. In addition, if the photograph is placed at eye level, then the point of view is one of the equality and there is a power difference involved (Kress and van Leeuwen, 2006:146). In the process of coding of the considered photos, “viewer power” can be indicated as high angle, “equality” can be indicated as eye-level angle and “represented participant power” can be indicated as low angle (see Kress & van Leeuwen, 2006: 148).

Kress & van Leeuwen (2006: 127,139) explore the term “system” for denomination “contact”, “social distance” etc. They write: “Unlike the system of “offer” and “demand”, the system of social distance can apply also to the representation of objects and of the environment”, “And, while in language one cannot easily have degrees of “ourness” and “theirness”, in images such gradation is an intrinsic part of the system of involvement. Finally, there is no “yours” in the system of horizontal angle” (see Kress & van Leeuwen, 2006: 127,139).

Thus, based on Kress & van Leeuwen (2006: 148), this research borrows the mentioned codes for the coders, who have to refer to the table descriptors during an encoding process (see Table 1).

Table 1. Interpersonal metafunction's codes for photos

System	Code	Description
Contact	Demand	gaze at the viewer
	Offer	absence of gaze at the viewer
Social Distance	Intimate/personal	close shot
	Social	medium shot
	Impersonal	long shot
Subjectivity Attitude	Involvement	frontal angle
	Detachment	oblique angle
	Viewer power	high angle
	Equality	eye-level angle
	Represented participant power	low angle

3. DATA AND METHODOLOGY

In order to check the hypothesis, two-stage research has been conducted with the focus on the identification of the main differences between the Indian and the Russian perception of the ideology of the Russian Orthodox Church in the Patriarch's photos. The selected photographs of Patriarchs Alexey II, Kirill and Bartholomew have constructed the corpus. The whole photos' corpus includes 526 photos taken from the official Orthodox Church website. The major part of the photos presents the activity of Patriarchs Alexey II, Bartholomew and Kirill (Gundjaev), who is well known as an active Church writer (see Gundjaev, 2009).

The research procedure of the present study goes through the following stages:

Stage I. Coding the whole photos' corpus by four coders. Two Russian and two Indian students, called coders, made a special group trained on the SPSS program. Coders were instructed purposefully how to use SPSS's program (SPSS v.17) for coding. They were provided with coding descriptors composed in accordance with Kress and van Leeuwen' theory (see Table 1). Firstly, coders read through the codes descriptors, discussed criterions, after that two Russian and two Indian students coded 526 photographs separately. The importance of the result analysis at this stage was determined by the coding procedure.

The first stage addressed the research question whether there is a statistically significant difference in the Indian and Russian coding of the whole photos' corpus. In order to answer this question, four coders handed coding results to the instructor in the form of sav. files (SPSS). The instructor measured the level of agreement (inter-rater reliability) between two Indians and two Russians, using the Cohen's Kappa κ coefficient (Cohen, 1960, 1968; Fleiss et al., 1980; Fleiss et al., 2003). This coefficient is applicable but restricted to pair work because of its ability to measure the level of agreement between two experts. After that the level of agreement between four pairs of Russians and Indians was calculated. Finally, the excel tables were filled in and schemes organized for the results presentation.

Website Dfreelon.org was used to calculate Krippendorff's alpha in order to check the statistically significant difference between four coders. According to the description of Krippendorff's alpha coefficient, sufficiently high degree begins from 800. Scientists generally rely on data reliability $\alpha \geq 0.800$. If the data lies between $0.800 > \alpha \geq 0.667$ the findings are considered as preliminary. If data reliability is low ($\alpha < 0.667$) the findings cannot be found.

Stage II. Semi-structured interview with coders. The second stage of the research process involved "face to face" semi-structured interviews, which were carried out in July 2016 in St. Petersburg. Semi-structured interviews with the Indian coders were conducted in English, with the Russian coders in Russian language, respectively. The data gained from the semi-structured interviews with two Russian and two Indian coders made ($N_c = 4$) after their coding of the whole photos' corpus. The second stage of the research addressed the following research question: how did two Indian coders and two Russian coders overcome problems they encountered during coding the whole photos' corpus?

4. RESULTS

4.1. Stage I. Results of Coding the Whole Photos' Corpus ($N_c = 4$, $N_{ph} = 526$)

In line with the research question this section presents the results of the analysis of coding the whole photos' corpus ($N_c = 4$, $N_{ph} = 526$) using data collected in the small-scale research.

4.1.1. Contact

The review of Kress and van Leeuwen theory reminds that the researchers distinguish between the pictures, where represented participants look directly at the viewers, and the pictures with the absence of gaze at the viewer. The first are named “demand” and second are named “offer” systems (see Kress & van Leeuwen, 2006: 122,148). It is important for the objectives of the present study to measure the *inter- rate reliability* between coders. So, the authors of this paper started with an overview of *inter - rate reliability* (Cohen’s Kappa κ ; Krippendorff’s alpha α) for the system of *contact* (see 4.1.1.1), then the results of *contact* coding were given (see 4.1.1.2.).

4.1.1.1. Overview of Inter-Rater Reliability (Cohen’s Kappa κ ; Krippendorff’s Alpha α)

In order to test the hypothesis it is important to use Cohen’s Kappa (Cohen’s Kappa κ) coefficient, which is a statistic which measures inter-rater agreement for qualitative (categorical) items. The measure of agreement Kappa is taken because it can be used for the analysis of more subjective evaluations (see: Oleinik, Popova, Kirdina & Shatalova, 2013). Unlike Krippendorff’s alpha, the calculation of Cohen’s Kappa shows the degree of random agreement that is interpreted in terms of the constancy with which a coder conducts categorization of units of analysis (Artstein & Poesio, 2008: 561, 570). From this point of view, the final row and column of contingency table indicate the preferences and prejudices of the coders (Perreault & Leigh, 1989: 139), although do not indicate the actual distribution of units as it happens in the case of Krippendorff’s alpha. Originally Kappa is calculated for the case with two coders. The value of Cohen’s Kappa is defined as:

$$\kappa = \frac{P_o - P_e}{1 - P_e}$$

where p_o is the relative observed agreement among raters, and p_e is the hypothetical probability of a chance agreement, using the observed data to calculate the probabilities of each observer (Seale, 2011: 462). This formula is later generalized to the case of the plurality of coders (Siegel & Castellan, 1988: 285).

The most important assumption is that “probability that an object is assigned to a particular category does not vary across raters” (Siegel & Castellan, 1988: 291). Coders agree because they share similar opinions or similar values. Despite the subjectivity of their decisions they manage to come to an agreement.

The focus change from the natural distribution of categories (in the case of *Krippendorff’s alpha*) to subjective judgments of the coders (in the case of *Cohen’s Kappa*) leads to the resistance from apologists of Krippendorff’s alpha. It is believed that Kappa “concerned with the two individual observers, not with the population of data they are observing, which ultimately is the focus of reliability concerns” (Krippendorff, 2004: 248; see also Hayes & Krippendorff, 2007: 81). Nevertheless, Kappa and Krippendorff’s alpha can refer to different dimensions of reliability: if the first characterises the reliability of judgments, Krippendorff’s alpha mainly characterizes the reliability of data.

In order to combine two strategies in the present research, both coefficients are considered. In the case of identification of similarity/ differences between two Russian and two Indian coders, *Cohen's Kappa* is measured. However, there is a need to use *Krippendorff's alpha* in order to show similarity/distinction between all four coders and check *Cohen's Kappa's* results. A list of *Cohen's Kappa* interpretation (Landis & Koch, 1977) is given in Table 2, a list of *Krippendorff's alpha* interpretation (Krippendorff, 2004) is given in Table 3.

Table 2. Interpretation of the *Cohen's Kappa* agreement

Cohen's Kappa	Interpretation
< 0	Poor agreement
0.0 – 0.20	Slight agreement
0.21 – 0.40	Fair agreement
0.41 – 0.60	Moderate agreement
0.61 – 0.80	Substantial agreement
0.81 – 1.00	Almost perfect agreement

Table 3. Interpretation of the *Krippendorff's alpha* reliability

Krippendorff's alpha	Interpretation
$\alpha < 0.667$	data reliability is low; we cannot make any conclusions
$0.800 > \alpha \geq 0.667$	preliminary conclusions
$\alpha \geq .800$	data reliability is high

The coders in the research were named like Indian 1, Indian 2 and Russian 1, Russian 2. Based on the description of statistical coefficients, the coefficients were calculated with the help of SPSS program and website (dfreelon.org). *Cohen's Kappa* was calculated for “*contact*” for each pair of coders. These data are presented in Table 4.

Table 4 shows that *Cohen's Kappa* between two Indians is 0,762. Value 0,762 means substantial agreement. Further, still the calculation shows $p = 0,000$. It is needed to note that the level of agreement between Russians coders is high ($\kappa = 0,862$). It means almost perfect agreement. The relationship is statistically significant ($p = 0,000$).

Table 4. Result of Inter-rater reliability (*Cohen's Kappa* κ) for *Contact*

	Indian1	Indian2	Russian1	Russian2
Indian1	X	0,762	0,582	0,538
Indian2	0,762	X	0,487	0,487
Russian1	0,582	0,487	X	0,862
Russian2	0,538	0,487	0,862	X

Note: Green colour shows Substantial and Almost perfect agreement and red colour shows Moderate and Fair agreement.

Table 5. Value of Krippendorff's alpha for system of contact

Krippendorff's alpha (ordinal)	0.606	N coders:	4
Krippendorff's alpha (interval)	0.606	N cases:	526
Krippendorff's alpha (ratio)	0.606	N decisions:	2104

In contrast, the value of agreement's coefficient between coders from different countries is lower, and, referring to interpretation of Cohen's Kappa, it means moderate agreement. Between Russian 1 and Indian 1 the value of measure of Cohen's Kappa is 0,582, between Russian 1 and Indian 2 the value of measure of Cohen's Kappa is 0,487, between Russian 2 and Indian 1 the value of measure of Cohen's Kappa is 0,538 and between Russian 2 and Indian 2 the value of measure of Cohen's Kappa is 0,487. Complementary calculation of Krippendorff's alpha assures that the degree of agreement in the encoding of "*contact*" between coders of international team is low (see Table 5).

Krippendorff's alpha proves that measure of agreement ($\alpha < 0.667$) is low and difference between the Russians and the Indians are statistically significant. Thus, referring to the system of *contact* it means disagreement between Russian and Indian coders. At the same time, Kappa confirms the high degree of agreement between the Indians ($\kappa = 0,762$) and the Russians ($\kappa = 0,862$).

4.1.1.2. Results of Contact Coding ($N_c = 4$; $N_{ph} = 526$)

The results of contact coding are presented in Table 6. It is clearly stated that among Indian and Russian coders "*demand*" exceeds "*offer*" in the whole photos' corpus. Nevertheless, the difference between the Russians and the Indians is evident (see Table 6).

Table 6 presents the number of photographs encoded by the Indians as "*demand*". It is ranged from 81.2% to 81.6%. In comparison, the coding of "*demand*" by the Russians fits the diapason from 64,1% to 66,5%. The analysis of the differences reveals the examples of the full consent and the full absence of agreement in encoding. Thus, Figure 3 "The meeting of the Patriarch with Naryshkin in Patriarch's residence" and Figure 4 "The meeting of the Patriarch with a foreign delegation" are examples of full agreement in the coding of "*contact*" between Russian and Indian coders. Presumably, it is caused by the fact that Patriarch and his guests look directly at the viewer, and there is no doubt that it is a "*gaze at the viewer*" (see Figures 3, 4).

Table 6. Results of coding of *Contact*

	Indian 1	Indian 2	Russian 1	Russian 2
Demand	81,6	81,2	66,5	64,1
Offer	18,4	18,8	33,5	35,9
Total	100	100	100	100

The presented below pictures cause particular difficulties in identification. An ambiguity in the pictures is recognized as it is not easy to identify whether the Patriarch looks straight at the viewer or not. It has to be noted that in both figures (see Figures 5, 6) the Indian coders' preferences lie with "*demand*", while the Russians mention "*offer*". Presumably, the Indians evaluate miniature eye movements as inconsiderable. On the other hand, from certain angles

it seems that the Patriarch looks at the viewer. As for (see Section 5) the Russian coders, they demonstrate the tendency to encode “*contact*” as “*offer*” in all controversial cases.

4.1.2. Distance

Referring to section 2, “distance” according to Kress and van Leeuwen can be encoded as intimate/personal, social or impersonal. For the coders intimate/personal distance can be defined as “close shot”, social distance as “medium shot”, impersonal as “long shot” (see Kress & van Leeuwen, 2006: 148). Below the results of “distance” coding by two Russian and two Indian coders are given. The whole photos’ corpus comprises 526 ($N_{ph} = 526$) items.



Figure 3. The meeting of the Patriarch with Naryshkin. Note: The Russians and the Indians encoded this photograph as “*demand*”.



Figure 4. The meeting of the Patriarch with the foreign delegation. Note: The Russians and the Indians encoded this photograph as “*demand*”.



Figure 5. During the Liturgy. Note: The Russians and the Indians encoded the given photographs differently: The Indians have chosen “*demand*”, while the Russians have chosen “*offer*”.



Figure 6. Meeting of the Patriarch with Naryshkin.

4.1.2.1. Overview of Inter-Rate Reliability (Cohen's Kappa κ ; Krippendorff's Alpha α)

The results of encoding are presented in Table 7. It is evident, the Cohen's Kappa agreement between two Indians is 0,941, that means substantial agreement ($p = 0,000$). It is needed to note that the level of agreement between Russians coders is either high ($\kappa = 0,968$). It means almost perfect agreement. By comparison, statistical significance is $p = 0,000$.

In contrast, the level of agreement between coders from India and between coders from Russia is rather low. For example, the Cohen's Kappa agreement between Russian 1 and Indian 1 is 0,599, between Russian 1 and Indian 2 is 0,632, between Russian 2 and Indian 1 is 0,608, while between Russian 2 and Indian 2 is 0,641. It is worth mentioning that the encoding of "*distance*" gives the highest level of Krippendorff's alpha agreement throughout the whole photos' corpus. Table 8 below shows the Krippendorff's alpha for distance system. Krippendorff's alpha has values from 0.776 (Krippendorff's alpha ordinal) to 0.788 (Krippendorff's alpha ratio). However, despite the Krippendorff's alpha is 0.776/0.788, this value is less than 0,800. Provided it is higher than 0.800, social scientists can rely on the data.

In general, respectively high level of general agreement does not lead to a complete lack of distinction. In comparison, Cohen's Kappa κ shows that agreement between the Indians is 0,941, between the Russians is 0,968 while between the Russians and the Indians it varies from 0,599 to 0,641. Thereby, the conclusion can be made that the system of *distance* shows little difference in coding between the Russians and the Indians.

4.1.2.2. Results of Distance Coding ($N_c = 4$; $N_{ph} = 526$)

Table 9 presents the results of distance coding. There is a tendency among the Indians to code most of the photos as intimate/personal, while the Russians put more emphasis on impersonal distance (see Table 9). Considering the coding as impersonal the difference reaches 13,1%-14,1% for the Indians and 22,2%-22,4% for the Russians. In contrast, the difference in intimate/personal coding is less and varies from 12.2% for the Indians to 9,5%-9,7% for the Russians. The difference might be detected because of the size of the photographs' corpus ($N_{ph} = 526$). Both groups encode the majority of photos as social distance at the same time (from 68.1% of Russians to 73,8-74,7% of Indians).

The photos with full consent and full divergence in coding have been chosen to illustrate slight disagreement with the Russians and the Indians "*distance*" coding. The physical distance in Figures 8 and 9 are measured as dissimilar, but the Indians and the Russians encoded it like identical.

Table 7. Result of Inter-rater reliability (Cohen's Kappa κ) for *Distance*

	Indian1	Indian2	Russian1	Russian2
Indian1	X	0,941	0,599	0,608
Indian2	0,941	X	0,632	0,641
Russian1	0,599	0,632	X	0,968
Russian2	0,608	0,641	0,968	X

Note: Green colour shows substantial and almost perfect agreement, red colour shows moderate agreement.

Table 8. Value of Krippendorff's alpha for the system of *Distance*

Krippendorff's alpha (ordinal)	0.776	N coders:	4
Krippendorff's alpha (interval)	0.779	N cases:	526
Krippendorff's alpha (ratio)	0.788	N decisions:	2104

Table 9. Results of the system of *Distance coding* (%)

	Indian 1	Indian 2	Russian 1	Russian 2
Intimate/personal	12,2	12,2	9,7	9,5
Social	74,7	73,8	68,1	68,1
Impersonal	13,1	14,1	22,2	22,4
Total	100	100	100	100

In the provided photos the Patriarch is seen in full length, at least the most part of his body is visible. The event where the Patriarch blesses parishioners does not distract from the adequate code description. For Russian coders this procedure tends to be rather controversial, only if they accept this religious event as personal (see Figures 8 and 9). In some cases they could evaluate the distance as “*intimate/personal*” in Figure 9.



Figure 8. The Patriarch is in front of the departed bishop. Note: Both the Russians and the Indians encoded the photograph as “*social distance*”.

Figure 8 explains why the coders refuse to code “*distance*” as “*intimate /personal*”, and justify their refusal. It is open to question why the distance in Figure 9 is not coded by the Russians as “*intimate/personal*”. During the coding of Figure 11 they perceive distance as more remote and evaluate it as the maximum “*impersonal distance*”. In contrast, the Indians encode this distance as the “*social*” (see Figure 11).

The Russians demonstrate consistency in the analysis and in most of the cases (more than 40 photos) consider the distance as a far location (see e.g., Figures 10 and 11). The situation indicates that the Russians comprehend the Patriarch as more distant than the Indians. The ambiguity creates uncertainty, whether Russian coders intend to distance themselves from the religion or quite the opposite: whether they get involved in religious life and, therefore, consider the Patriarch as a person who belongs to this world either. Nevertheless, the factors that influence their choice in controversial situations are still unknown. For example, the

Russians treat the Patriarch like a spiritual figure, the Indians on their part equals the Patriarch with an ordinary person (see Figure 9). The authors of this article evaluate the participants' attitudes and highlight the influence of ideology. In all circumstances, further research is recommended in order to get more accurate results.



Figure 9. The Patriarch blesses archimandrite before ordination in bishop. Note: Both the Russians and the Indians encoded the photograph as “social distance”.



Figure 10. Communication between the Patriarch and the future bishop. Note: The Russians and the Indians encoded the photograph differently: The Russians have chosen “social distance” and the Indians have chosen “intimate/personal distance”.



Figure 11. The Patriarch, two metropolitans and bishops of Orthodox Church. Note: The Russians and the Indians encoded the photograph differently: the Russians have chosen “impersonal distance” and the Indians have chosen “social distance”

4.1.3. Attitude: Involvement and Detachment

Section 2 allows us to indicate “attitude: involvement” as “frontal angle” while “attitude: detachment” can be indicated as “oblique angle” (see Kress and van Leeuwen, 2006: 148). In this sub-section, the results of coding “attitude” are given: “involvement and detachment”, conducted by two Russian and two Indian coders (the whole photos corpus equals to $N_{ph} = 526$, $N_c = 4$).

4.1.3.1. Overview of Inter-Rater Reliability (Cohen’s Kappa κ ; Krippendorff’s Alpha α)

The results of coding by two Russian and two Indian coders are presented in Table 10. Table 10 shows the value of measure of agreement Kappa that makes 0,924 between two Indians. Value 0,924 means substantial agreement. Calculation has either figure $p = 0,000$. It is needed to note that the level of agreement between Russian coders is also high ($\kappa = 0,954$), what means almost perfect agreement. At the same time the relationship is statistically significant ($p = 0,000$).

The level of agreement between coders from India and Russia is essentially low. Between Russian 1 and Indian 1 the value of measure of agreement Kappa is 0,296, between Russian 1 and Indian 2 the value of measure of agreement Kappa is 0,288, between Russian 2 and Indian 1 the value of measure of agreement Kappa is 0,292 and between Russian 2 and Indian 2 the value of measure of agreement Kappa is 0,283. Additional calculation of Krippendorff’s alpha α is conducted in order to insure that the degree of agreement in the encoding of “attitude: involvement and detachment” between members of international team is really low; data reliability is $\alpha = 0.491$ (see Table 11). In addition, there is a strong disagreement between the Russians and the Indians regarding the system of “attitude: involvement and detachment”.

Table 10. Result of Inter-rater reliability (Cohen's Kappa κ) for Attitude: Involvement and Detachment

	Indian 1	Indian 2	Russian 1	Russian 2
Indian 1	X	0,924	0,296	0,292
Indian 2	0,924	X	0,288	0,283
Russian 1	0,296	0,288	X	0,954
Russian 2	0,292	0,283	0,954	X

Table 11. Value of Krippendorff's alpha α for the system of Attitude: Involvement and Detachment

Krippendorff's alpha (ordinal)	0.491	N coders:	4
Krippendorff's alpha (interval)	0.491	N cases:	526
Krippendorff's alpha (ratio)	0.491	N decisions:	2104

Table 12. Results of encoding of the system of Attitude: Involvement and Detachment (%)

	Indian 1	Indian 2	Russian 1	Russian 2
Involvement	12,5	13,5	28,3	29,5
Detachment	87,5	86,5	71,7	70,5
Total	100	100	100	100

To sum up, the following section makes an attempt to reveal the reasons for the difference occurrence. The system of “attitude: involvement and detachment” points out the difference in agreement between the Russians and the Indians. The level of inter - rate reliability among the Indian coders is high (0,924). The same situation is true for the Russian coders (0,954). Overall, it can be seen that the level of inter - rate reliability among the group of Indian coders and among the group of Russians coder is quite high throughout the procedure of coding. However, the level of agreement between the Russians and the Indians is ranged from 0,288 to 0,296; Krippendorff's alpha α (ordinal, interval, ratio) has quite low value 0.491 with four coders.

In the case of “attitude system: involvement and detachment” demonstrate the highest level of differences and the lowest degree of agreement between Indian and Russian coders is demonstrated. Thus, the code system, developed by Kress and van Leeuwen as subjectivity involves measurement of subjective evaluation and attitude. Nevertheless, the description codes “*frontal angle*” and “*oblique angle*” clear up and simplify the encoding process.

4.1.3.2. Results of Coding of Attitude: Involvement and Detachment ($N_c = 4$; $N_{ph} = 526$)

The results of the system of “attitude analysis: involvement and detachment” are presented in table 12. Cohen's Kappa κ and Krippendorff's alpha α show that the cases, when both Russians coders chose other value than both Indians, are frequent. Table 12 and Figure 12 tell about the significant differences between the Russians and the Indians in the evaluation of “attitude: involvement and detachment”. According to both Indian and Russian

coders, “detachment” prevails in the full corpus of photographs. However, the Russians prefer “involvement” more often than the Indians. The Indians perceive the photographs angles as more detached. In general, both Russians coded 84 photos from the whole photos’ corpus as “involvement”, whereas both Indian coders have chosen “detachment”.

The selected photographs with complete agreement and significant disagreement between two groups of coders illustrate the differences. Figures 13 and 14 present the complete agreement between the Russians and the Indians in the coding of “*attitude: involvement and detachment*” in the provided photographs. Accurate description of “*oblique angle*” facilitate coding of photographs as “*detachment*”.

The apparent examples of “*attitude*” coding discrepancy: *involvement and detachment* photographs between the Russians and the Indians are the following (see Figure 15a). The Russians have chosen “*involvement*” while the Indians have chosen “*detachment*”. “*Detachment*” seems to be either true for Figure 15, where “*frontal angle*” is seen. However, the big icon in the centre can be taken for “*frontal angle*” (see Figure 15a). Russian coders were invited to give comments (see Section 4.2.).

4.1.4. Attitude: Viewer Power, Equality and Represented Participant Power

The study of interactional metafunction shows that (Section 2, Table 1) “*attitude: viewer power*” can be indicated as “*high angle*”, “*attitude: equality*” can be indicated as “*eye-level angle*” and “*attitude: represented participant power*” can be indicated as “*low angle*” (see Kress and van Leeuwen, 2006: 148). The following part of the paper presents the results of encoding “*attitude: viewer power, equality and represented participant power*” by two Russian and two Indian coders (the whole photos’ corpus $N_{ph} = 526$, $N_c = 4$).



Figure 13. The future bishop takes an oath in front of the Patriarch before ordination. Note: The Russians and the Indians encoded this photograph equally; they both have chosen “detachment”.



Figure 14. The Patriarch and bishops before ordination. Note: The Russians and the Indians encoded this photograph equally; they both have chosen “detachment”.



Figure 15a. The Patriarch's service in Cathedral of Christ the Savior in Moscow. Note: The photograph was encoded by the Russians and the Indians differently: The Russians have chosen “involvement” but the Indians have chosen “detachment”.

4.1.4.1. Overview of Inter-Rater Reliability (Cohen's Kappa κ ; Krippendorff's alpha α)

The results of encoding by two Russians and two Indians coders are presented in Table 13 below. The value of agreement Cohen's Kappa κ between two Indians is 0,873. It means substantial agreement with statistical significance $p = 0,000$. It is worth attention that the inter-rater reliability of the level of agreement between Russians coders is also high ($\kappa = 0,837$). It means almost perfect agreement, statistically significant ($p = 0,000$).

Table 13. Result of Inter-rate reliability (Cohen's Kappa κ) for Attitude: Viewer power, Equality and Represented participant power

	Indian 1	Indian 2	Russian 1	Russian 2
Indian 1	X	0,873	0,251	0,278
Indian 2	0,873	X	0,321	0,345
Russian 1	0,251	0,321	X	0,837
Russian 2	0,278	0,345	0,837	X

Table 14. Value of Krippendorff's alpha α for system of Attitude: Viewer power, Equality and Represented participant power

Krippendorff's alpha (ordinal)	0.5	N coders:	4
Krippendorff's alpha (interval)	0.54	N cases:	526
Krippendorff's alpha (ratio)	0.62	N decisions:	2104

In contrast, the value of measure of agreement Kappa between Russian 1 and Indian 1 is only 0,251, it makes 0,321 between Russian 1 and Indian 2, it is 0,278 between Russian 2 and Indian 1, while it is 0,345 between Russian 2 and Indian 2. The Krippendorff's alpha is also low ($\alpha < 0.667$) (see Table 14). There is a need to show significance of the study, so measure of agreement between two groups of coders is lesser than measure of agreement between coders of one group. It also took place in the previous measurements of inter-rater reliability in the coding of the systems of “*contact*” (See Section 4.1.1.), “*distance*” (See Section 4.1.2.) and “*attitude: involvement and detachment*” (See Section 4.1.2.). The emerged tendency remains steady throughout the research.

4.1.4.2. Results of Coding of Attitude: Viewer Power, Equality and Represented Participant Power ($N_c = 4$; $N_{ph} = 526$)

The results of the system of power analysis are given in Table 15. As it is shown in the table below (see Table 15) the differences in evaluation between two Russian and two Indian coders emerge only with regard to equality and representation power. As for power representation the same differences appear twice: The Indians coded 20,7-25,3% from the whole photos' corpus as “*representation power*”, while the Russians do the same for 47,1-47,4% of photos. According to the Indians the coding of 67,1-71,4% photographs are characterized by *equality*, but the Russians encoding mentions *equality* in reference to 44,6-45% of photographs. In the case of *viewer power*, there is no difference in encoding: 7.6-7.9% of the whole photos' corpus for Indian coders and 7.6-8.3% for Russian coders.

Table 15. Results of encoding of the system of Attitude: Viewer power, Equality and Represented participant power

	Indian 1	Indian 2	Russian 1	Russian 2
Viewer power	7,9	7,6	8,3	7,6
Equality	71,4	67,1	44,6	45
Representation power	20,7	25,3	47,1	47,4
Total	100,0	100,0	100,0	100,0



Figure 18. The Patriarch wears mitra during the Church service. Note: The Russians and the Indians encoded the photograph as “*represented participant power*”.

One of the essential distinctions in the perception of “*represented participant power*” has been revealed. Interpretation of “*represented participant power*” as “*low angle*” given to coders seems to be a bit confusing as it deals more with photo’s geometry than power. In order to comment on the mentioned episodes, the photographs with complete agreement and total difference in coding were selected. The Russians and the Indians demonstrate full agreement while encoding “*attitude: viewer power*”, “*equality*” and “*represented participant power*” in the following photographs (Figure 18 and 19).

The perfect examples of differentiation in encoding of power between two Russians and two Indians are provided below (see Figures 20, 21).



Figure 19. The Patriarch blesses laity using dikiri and trikiri. Note: The Russians and the Indians encoded the photograph as “*represented participant power*”.



Figure 20. The Patriarch's prayer. Note: The photograph was encoded by the Russians and the Indians differently: the Russians have chosen "*represented participant power*" while the Indians have chosen "*equality*".

The significant differences exist between the Russians and the Indians in the coding of "*attitude: viewer power, equality and represented participant power*". The Russians and the Indians evaluate "*viewer power*" similarly. However, in respect to "*equality*" and "*represented participant power*", their reports contain serious disagreement. Thus, the authors of this paper call the necessity in specifying the coders' position and feelings during the coding (see Section 4.2.).



Figure 21. The Patriarch in the Cathedral. Note: The photograph was encoded by the Russians and the Indians differently: the Russians have chosen "*represented participant power*", while the Indians have chosen "*equality*"

4.2. Stage II. Results of Semi-Structured Interview with Coders

The semi-structured interviews with four coders were conducted to reveal the problems arised during the coding process and answer the second research question that sounds: How did two Indian coders and two Russian coders overcome problems they encountered during the coding of the whole photos' corpus? Over the semi-structured interviews the Indian coders were questioned in English language, while the Russian coders communicate in Russian. As the result, socio-demographical characteristics of the coders are presented in Table 16.

Following the *guide of semi-structured interview* with coders, a set of open questions were asked. All the questions are related to the main problems, ideas or emotions during encoding.

Table 16. Socio-Demographical Characteristics of Coders

	Age	Gender	Job or profession	Religion	Time of coding
Indian 1	26	m	Student, the restaurant worker	Don't mention	A week
Indian 2	23	f	Student, the restaurant worker	Indian traditional	A week
Russian 1	24	m	Master student, unemployed, the part-time guide	Orthodox	Two-three days
Russian 2	23	f	Master student, part-time office-worker in an advertising agency	Don't mention	Five days

4.2.1. Common Problems of Coding

Actually, each coder reports some problems with coding. The common problems of coding reported by Indian coders are presented in Table 17. The considerable problems mentioned by the coders are as the following: *the lack of time, the difficulty of coding task and freakish photos* (see Table 17).

The lack of time and the difficulty of the task can be taken for granted while coding 526 photos' corpus. More than that, the Indians claim that the strangeness of photos can be justified by the character of cultural traditions. The photos of the Russian Patriarchs are culturally dependent and rooted in the Russian culture exclusively, consequently, the Indians may perceive them critically. The Orthodox Patriarchs' photos are not only unusual and odd for perception, but also can challenge Indian tradition. The latent negative attitude to Orthodox ideology appears because it does not match Indian culture and, as the result, are seen inadequate during the photo perception. It means that the Orthodox Patriarchs' photos are not considered like an image of someone or something but are reckoned as ideological. Moreover, a photographer probably did not anticipate how the photo ideology can be perceived. In the case of the Indian coders, this ideology is perceived quite negatively and influence Indian coders to work slower and without enthusiasm.

As for Russian coders, they also face problems (see Table 18). The most significant problems mentioned are: problems with the use of English, English-Russian translation, the link between the name and the description of codes and the usage of the inadequate Western theory for the current task. In addition, the following problems are mentioned by one of the

Russian coders: poor knowledge of SPSS, the difficulty with the task coding, gender inequality, lack of instructions for coding.

Table 17. Common problems of coding according to the Indian coders

	Problems	Transcript excerpts
Indian 1	time	To be honest...(pause) I did not have enough time to complete this task.
	task difficulty	This work was... really-really difficult for me.
	uncustomary photos	These photos probably look rather strange to people unfamiliar with the Patriarch, etc... It takes a lot of time ... to find him, to see... Here is a rather strange thing that look nothing like ... these photographs have nothing to do with the Indians...(pause)
Indian 2	time, task difficulty	Actually, I am studying in Medical Academy and at the same time I work in restaurant "Tandoor" in Saint Petersburg. So after work I come back home and feel very tired and it was needed to force myself to do this encoding ...to be honest during coding of some photos I could not find who the Patriarch is....among all these people. Then I called my friend and asked him. He told me that Patriarch dressed in green vestments.
	uncustomary photos, odd looking photos	I face no problems apart from the odd looking photos... Almost all of them are odd looking

It is obvious that Russian coders in comparison with Indians highlight plenty of problems, but only one problem marked as *the difficulty with coding* coincides with the Indians'. The problem *difficulty of the coding task* is mentioned only by one Russian coder and deals mostly with the SPSS programme but not with photos' coding. The vast majority of problems are focused on cultural differences in coding. The Russians do not distinguish accurately, whether these problems are related to the translation, or they are influenced by Western experience that is invalid for the Orthodox Patriarchs' photos analysis. To sum up, both Russian coders come to conclusion that the Kress and van Leeuwen's theory cannot be applied. This idea is absent in the answers of the Indian coders who call photos as inadequate and odd looking. Nevertheless, both groups of coders face problems while interpreting the notion "inadequacy".

Two groups offer their interpretations of "inadequacy". While Indian coders explain it as a wrong approach in the Patriarch' behavior and dominance (one Russian coder names dominance as "gender inequality"), Russian coders take "inadequacy" as a concept gap between the name and the code descriptions. The authors of this article claim absolutely different perception of the coding problems among coders. Presumably, the Russians concern about "*instructions were not enough for coding*" can partially explain the divergence of views. However, it is wrong to assume that more detailed and prolonged instructional period may guarantee clearness in evaluation. On the contrary, more differences in perception are emphasized at the early stage of the study.

4.2.2. Problems of Coding of Contact, Distance and Attitudes

After the description of the main problems, the coders were asked to give comments on each system of **coding contact**, **distance** and both **attitudes**. The results of the Indian coders are presented in Table 19.

Table 18. Common problems of coding according to the Russian coders

	Problems	Transcript excerpts
Russian 1	poor knowledge of SPSS	I have never heard of SPSS before. So it was rather difficult for me to use this program.
	task difficulty	Also..... honestly, it was very boring and monotonous
	problems with the use of English or English-Russian translation	I encoded in English, but at the same time there were many problems with these codes .. I find difficulties with translation some words into Russian... For example, what is “detachment”? It is the first time when I see this word. I translate it as a non-involvement. Why our encoding is in English when the photos are Russian?
	absence of the link between the name and description of the codes	All the code names are... very strange... It seems these codes does not fit their names. The codes’ names look incorrect.
	irrelevance of the Western theory for the current task	I can see that “demand” and “offer” are also ideological names, they are borrowed from the Western facial expressions study. In turn, the Western experience of facial expressions is based on the Western ideology, for example, the American positive thinking. However, for other countries “gaze at the viewer” cannot be combined with “demand”. It is the irrelevance of the Western theory without suitable alteration.
Russian 2	gender inequality	Some of the photographs depict the Patriarch and the women in a way that they look not equal. The Patriarch is always above the women. The Patriarch always initiates the main action. There aren’t any photographs where women are initiators of an action.
	poor instructions for coding	I think instructions have to focus on controversial situations. After our meeting and instructions, I think everything is ok. However, when I just start my coding, I have found many controversial situations that are difficult for clear evaluation. Instructions should be longer with many details.
	problems with the use of English or English-Russian translating	Here at once, problems with understanding and translation of these terms arise.
	absence of the link between the name and the description of codes	Although I coded in English, the link between the name and the description of the code cannot be understood. So I relied on the description of the code and tried to find some angles.
	irrelevance of the Western theory for the current task	It seemed that problems appeared because the Western theory was used as you told us before. So, this theory can’t be effectively applicable in Russia.

Both Indian coders don’t mention any problem with the coding of “*contact*”. At the same time, both face the problem with “*distance*” coding. The more Indian 2 attempts to describe the image of the Patriarch as amiable the more evident it leads to coding the distance as less, e.g., as “*intimate/personal*”. At the previous stage of the present research we have found that the Indians see “*distance*” as more near/proximal than the Russians (see Table 9). Thereafter the semi-structured interviews confirm this tendency.

Table 19. Problems of coding of *Contact*, *Distance* and *Attitude* by the Indian coders

	System	Transcript excerpt
Indian 1	contact	No problems
	distance	It was not easy to measure “social distance” in the photographs. Interpretation of “social distance” which was given by Kress and van Leeuwen was not clear for me. What I think is... that... “social distance” is not a physical distance between the photographer and participants, but “social distance” is connected with interaction between people presented in the photographs
	attitude: involvement and detachment	Almost all photographs of the Patriarch have oblique angles. A viewer is an observer of the events or actions on the participants part. A photographer hasn't aligned himself with the Patriarch. He is always on the side...(pause)
	attitude: viewer power, equality and represented participant power	In my opinion, the Patriarch is a common person..... For the faithful he is a religious leader. For me, he is just a man. I see the Patriarch in photographs as a person equal to me...
Indian 2	contact	“contact” was easy. What can be difficult in “offer–demand”?
	distance	If a person looks more attractive, the distance seems less
	attitude: involvement and detachment	I cannot remember any problem
	attitude: viewer power, equality and represented participant power	I do not believe that the Patriarch has special religious power. For instance, I can believe that Ganesh is more powerful than Christian God... Actually, if some person is higher than another person it does not mean that he is more powerful. There is the same situation with the Patriarch. Photographers often depict the Patriarch as a person high authority. It irritates me because he is also human like me...

Regarding “*attitude: involvement and detachment*”, one of the Indian coders confirms that the Indians find more photographs of the Patriarch with oblique angles: “*Almost all photographs of Patriarch has oblique angles*”. Compared to the results of encoding of the whole photos’ corpus (see Table 12), some differences in perceptions of “*oblique angles*” between the Indians and the Russians are evident. The Indians refuse to explain and state the problems considering them “as default”.

Regarding “*attitude: viewer power*”, “*equality*” and “*represented participant power*” the Indians unexpectedly begin to report about their relation to the power of the Patriarch, but not about the problems in coding, insisting that the Patriarch is an individual equal to them. As one of the Indians claims: “*The most important thing is how people interact with each other, and where these people are placed in the photograph. I was very dissatisfied when the Patriarch’s face always takes the central position in the photos. The Patriarch for me is the same person like other people. Why is he always placed in the centre? Why does he often look taller than other people? I do not understand is it really needed to make a focus on one person*”. This saying determines the main reason why the reported results on power perception of encoding of the whole photos’ corpus (see Table 15) between Indians and Russians differs significantly. Despite the fact that both Indian and Russian coders are totally engaged with codes description, the eccentric reaction of Indians can be taken for the indirect evidence that coders also consider the meaning of the names of the codes (e.g., *Power*), the same is true for the Russians. The results for Russian coders are presented in Table 20.

Table 20. Problems of coding of *Contact*, *Distance* and *Attitudes* by the Russian coders

	System	Transcript excerpt
Russian 1	Contact	It seems that these codes do not match their names. If I looked at the code's name such as "<i>offer</i>" or "<i>demand</i>" I would have made inaccurate encoding. Therefore, controversies were decided with the second coder after looking at the description. The code names look incorrect. If the Patriarch does not see photographs, it does not mean that he demands something. He is being used of God and people who are present in Church. Even such word as "<i>offer</i>" is better than "<i>demand</i>" because "<i>offer</i>" of faith and service is the thing which Orthodox Church really gives to people. So, "<i>offer</i>" is more good characteristics of the Patriarch's behavior and all Orthodox Church ...we have a choice: we can see the description and we can see the name of the code. If we should choose the description, for example, "<i>gaze at the viewer</i>", then we should use a wrong nomination "<i>demand</i>". I can see that "<i>demand</i>" and "<i>offer</i>" are also too ideological names, they based on the Western facial expressions. In turn, the Western experience of facial expressions based on the Western ideology, for example, the American positive thinking. However, for other countries "<i>gaze at the viewer</i>" cannot combine with "<i>demand</i>".
	Distance	I cannot understand why " <i>social distance</i> " was written twice as the common name of all group and as a particular name of " <i>medium shot</i> ".
	Attitude: Involvement and Detachment	I think some words can't be translated into Russian... For example, what is "<i>detachment</i>"? It is the first time when I can see this word. I understood it as a non-involvement. I feel "<i>involvement</i>" in Liturgical actions which are often present in the photographs. I like to participate in Liturgical prayer. When I see these photographs I have the intention to pray. So for me, "<i>involvement</i>" does not connect with the angles. It is connected with situation and action which can be more interesting for me.
	Attitude. Viewer power, Equality and Represented participant power	The Patriarch for me is not just a person. He is the leader of the Church; he is responsible for all Orthodox Christians in Russia. The photographs often depict the Patriarch as a lovable father. And I agree with it... A lot of photographs were knowledge oriented. Even the depiction of the Patriarch's presence during the Liturgy is the source of knowledge about Liturgy.
Russian 2	Contact	The same problem arises with " <i>offer</i> " and " <i>demand</i> " because there is requirement with gaze
	Distance	(don't say)
	Attitude: Involvement and Detachment	Church photographers does not like to use frontal angles because during Liturgy they can't stay in front of the Patriarch. It is forbidden in Orthodox Church to stay between a priest or a bishop and an altar. So, they make photographs according to the church rules and regulations...I don't fully understand this division between "<i>involvement</i>" and "<i>detachment</i>". How can front angle be connected with "<i>involvement</i>"? "<i>Involvement</i>" for me means the participation in the process, but I can feel myself as a participant of the process depicted in photos without the frontal angle. The frontal angle does not give new information. Always the Patriarch should be in the center... Why? For example, I noticed a large icon in the center of the Church (Note: see Figure 15a).
	Attitude. Viewer power, Equality and Represented participant power	The power of the Patriarch is not actually his power. It is a spiritual power which is given from God. The photographs can't reflect this spiritual power. However, photographer can try to depict the Patriarch not as a bearer of some administrative resource but as a bearer of the grace of God. Some of the photographs are successful, in this regard.

The Russian coder 1 might treat coding too emotional; he always evaluates the procedure as “inappropriate” tool as the rational coding violates some important ideological items. Throughout the interview, he expresses a deep concern which means that he considers the Patriarch photos as ideology. At the same time he, in the line with the other coders, confirmed that the description from Table 1 is weighty for his coding.

Regarding the system of “*contact*”, both Russian coders have always confused codes “*offer/demand*” and interpret them more subjectively than stated in the description “*for other countries gaze at the viewer cannot combine with demand*” (Russian 1). Moreover, they evaluate the names of the codes “*offer*” and “*demand*” as more or less positive. For instance, the coder Russian 1 says “So, “*offer*” is more good characteristics of Patriarch’s behavior and the Orthodox Church”. Despite their belief that the coding is based on the description, a certain influence of cultural attitude can be seen in Table 6. “Results of coding of Contact”. It is evident that the Russian coders prefer “*offer*” more often than the Indians. The authors of this paper recognize it as cultural difference in perceptions of both the photos and the system of coding.

In contrast, regarding the system of “*distance*”, both Russian coders do not find any serious problems, while Indians are puzzled by non-attractive Patriarch’s view that leads to its perception as more distant. At the same time, regarding the system of “*attitude: involvement and detachment*” both Russian coders find problems similar with *contact*. In this case, they are discouraged by the word “*involvement*” and insist that involvement cannot be associated with “*frontal angle*”: “*How can front angle be connected with involvement*” (Russian 2). Finally, Table 12 shows “Results of encoding of the system of Attitude: Involvement and Detachment”, despite the Russians’ assumption that it has no influence on their coding.

Regarding the system of “*attitude: viewer power, equality and represented participant power*”, the situation differs but slightly from the Indians. The Russians mention Patriarch’s Power however, they do not take the Patriarch for an average person. The coding of “*attitude: viewer power, equality and represented participant power*” states drastic controversy between the Indians and the Russians (see Table 15). Russian coders perceive the Patriarch as the bearer of spiritual authority, while the Indians consider him as equal.

The above said confirms the influence of ideology on the perception of the photographs in different cultures exists. All coders, involved in the study, position themselves as ideologically neutral. However, a significant impact of the Orthodox ideology on Russian participants is evident. The Russians express more understanding towards the Church rules than the Indians and retain it during encoding. Over the interview the Russians associate themselves as action participants depicted in the photographs. The Indians take the Patriarch as an ordinary person; however, the image of Ganesh causes unconscious comparison of the Russian religious photos with the Indian religious photos. According to Russian’s point of view, the photographs depict the Patriarch as the “father” of an Orthodox believer.

In fact, both groups, the Indians and the Russians, constantly appeals to the domestic culture and cannot make coding without it. Despite their efforts to be objective and follow the instructions of the coding, they represent their cultural and ideological differences.

DISCUSSION AND CONCLUSION

The analysis is based on the issue whether it is possible to avoid the impact of cultural/ideological differences in coding when the ideal system of codes is provided, that enable to measure eye position or angle using computer program. The obtained answer is positive, but the authors cannot ignore the perception of free viewers which are not under control of the code book and the computer program.

Culture and ideology influence photo perception that is vital for photo producers. The role of the photograph in cultural/ideological/political affairs is likely to grow because of the increased importance of the internet, TV, 3D, virtual environment. Competing with video streaming, photographs still play a foundational role in communication process, however, little is still known about viewer's perception. This research tries to expand the understanding of photograph's role by focusing on how interactive meaning of photograph's is created, processed and interpreted by the representatives from non-Western cultures.

This study points out the importance of the Kress and van Leeuwen "visual grammar" in studying interactive meanings in photograph's. The authors of this paper share the view that the social semiotics' approach applied to the analysis of different forms of cultural communication allows to explore less known aspects of the very influential cultural/ideological institutions which "symbolic" power is depended on the use of visuals.

At the same time the problems faced during this research supply new ideas for the further understanding of cultural differences. Kress and van Leeuwen repeatedly focus our attention on the limitations of their theory based on Western examples (see e.g., Kress and van Leeuwen, 2006: 148). Despite this, the present study applies the theory in non-Western environment. It can be justified, firstly, by the need in tools for comparing different cultures, and secondly, to reveal and measure similarities that exist between cultures. So, this section highlights similarities and then proceeds to differences.

Similarities in the Russian and Indian perceptions of the Patriarch photographs' are explained by utilizing geometrical proportions. Russian and Indian perceptions of geometrical angles and distance are almost similar. Its worthiness opens possibilities for the expanded research based on the Kress and van Leeuwen theory. In the present research, all problems with interpretation of angles and distance are connected with ideological/cultural reasons and requests that results from interpretations. However, ideological/cultural reasons exist and their influence on the outcome of the research is rather strong. First challenge deals with the names of Contact's codes that are "demand" and "offer".

In spite of the fact that both Russia and India are non-Western countries, it is wrong to think that they are the same. From this point of view, the term "non-Western" calls something unknown, hidden from the Western analytical sight, a demarcation of white spot on the map of consciousness, than it is an explanation of something that is really "non-Western". For example, our Russian and Indian coders and respondents employ different strategy in coding/evaluating of "demand" and "offer". Surprisingly the Indians shows understanding of "demand" with slight similarity to "Western" as it is described in the Kress and van Leeuwen theory. At the same time, the Russians consider "demand" as a problem as it can not be clearly described geometrically. "Demand" and "offer" for Russians are different types of behavior when "demand" is a strong request "offer" expresses a soft request.

Coming back to offer/demand problem the question is stated whether Russian understand offer/demand wrongly. Halliday describes “demanding” as: *questions (ask, demand, inquire, query) or commands (call, order, request, tell, propose, decide; urge* (‘command: persuasive’), *plead* (‘command: desperate’), *warn* (‘command: undesirable consequences’)) (Halliday & Matthiessen, 2014: 514). Only part of these meanings of “demanding” can be understood in Russia correctly. Russians can understand “demanding” as *commands*. Most part of the commands’ meaning is acceptable for the Russians. However, the interpretation of “*plead*” (‘command: desperate’) also carries the meaning “offer” either.

The meaning of “demanding” as *request* is polysemnatic. For example, a teacher can apply to students with “demand” and a police officer can apply to humans with “demand”, but they should confer power to perform like this. It means Russian “demanding” (“trebovanie”) is tightly connected with the hierarchy and the power. From this point of view, for instance, the President of the United States cannot command to the Russians. It cannot be possible and “demand” cannot be accepted in any case without any dependency of eye position or angle.

Looking through the Patriarch photos the following paradox is seen. While the Indians code the Patriarch photos as “demand”, the Russians place a refusal. Suppose it happens because the Indians employ the exact meaning of “demand” in English, whereas the Russians rely on its literal translation into Russian as a “requirement” - “trebovanie”. The Russians explain the ignorance in coding “demand”/“trebovanie” as the power of the Patriarch spreads in the other dimension. It means that the Patriarch has the sacral power, thus, evaluation his actions as administrative power is unacceptable. Therefore, the Russians’ interpretation of “demand” means not abstract power, but an administrative power. As the result, the Russians code/evaluate the Patriarch actions as “offer”. For example, one of the Russian coders (Russian 2) notes: “*Power of Patriarch is not actually his power. It is a spiritual power which is given from God*”. So, van Leeuwen’s concept: “They do not look at the camera and therefore there is no social interaction with the reader” (van Leeuwen, 2008: 141) is not applicable here. The Patriarch does not look in the camera, however he actively interacts with Russian viewers who follow Orthodox ideological traditions.

The influence of ideology is found in coding/evaluation of “distance” and “attitudes”. Regarding system of “distance” the Indians and the Russians have contradiction in evaluation “more personal”/“more impersonal” distance. While Indians evaluate the Patriarch as an ordinary person and tend to “more personal” distance, the Russians treat the Patriarch as a spiritual person and, as a result, evaluate distance as impersonal because they do not count the Patriarch as an entity of the real world.

Regarding the system of “attitude: involvement and detachment” Indians and Russians experience contradiction around the term “part-whole relations”. “Involvement” is considered like part-whole relation (see e.g., Halliday & Matthiessen, 2014: 295). The results say that the Indians try to exclude themselves from the religion process depicted in the Patriarch’s photos and prefer “detachment” if the situation is controversial. Whereas the Russians are fully engaged with the church actions and chose “involvement”: “*I feel involved in Liturgical actions which are often presented in the photographs*”. In addition, some Russian coders fail to understand the meaning of the word “detachment”, it is witnessed in the saying: “*For example, what is “detachment”? It is the first time when I see this word. I understood it as a non-Involvement. Why our encoding was in English when they are our Russian photos?*”. This ideological and linguistic divergence lead to the significant differences in the photos’ evaluation as “involvement” or “detachment”.

Regarding the system of “attitude: viewer power, equality and represented participant power” Indians and Russians are faced with different interpretations of equality and represent participant power. The situation is almost similar to the “distance” evaluation/coding. Based on the vision of Patriarch as an ordinary person the Indians try to evaluate photos as “equality”, while the Russians prefer to see “represented participant power”. The Russians vision of “represented participant power” has a weak focus on Kress recommendations of angle because power for the Russians can be represented from both angles: high and low. Moreover, visualization from a high angle can represent the Patriarch as a “lake” where people may float to as streams down the mountains.

Thus, throughout the research both Indian and Russian coders and respondents have attempted to introduce their opinions about the photos orally, however, they come across problems like the choice of appropriate linguistic tools to describe visual phenomena. On the one hand, photos of different cultures cannot be described/compared non verbally, on the other, words and their equivalents in different languages can lead to the “wrong”/ peripheral/unusual interpretation and processing. In this research evaluation of the problems as culturally and ideologically determined is accepted. So, it is believed that words make ideology transparent as shown in the examples where the Russian is influenced by the Orthodox ideology and the Indian attempts to reconfigure the ideology according to Indian traditions. The Russians and the Indians do not provide unanimous opinions throughout all the codes. All codes are characterized by discrepancies in opinions of the Russians and the Indians. The angle geometry allows us to identify similarities in coding, but little is said about the photos’ perception. All the other cases of photo interpretation are strongly influenced by the ideology.

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Chapter 19

**MULTIPLE TYPES OF “THE GOOD” IN HRYHORII
SKOVORODA’S PHILOSOPHICAL DISCOURSE:
*DOBRO VS BLAHO***

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ABSTRACT

This chapter is dedicated to the formation of philosophical terminology in the history of Early-Modern Ukrainian culture. Two philosophical concepts—*dobro* and *blaho* (добро and благо)—are the focus here. Both are related to notions of good and wellbeing, but contextual nuances may affect their discrete meanings rather significantly. My main goal is to track the differences between them and discover the rationale behind them. I consider the manner in which these two words functioned in the works by the prominent 18th century Ukrainian philosopher Hryhorii Skovoroda. My study is based on a close reading of thirteen of his colloquies. In the process, I have also tackled the problem of translation posed by these complicated terms.

My study has led to the following conclusions: 1) Skovoroda uses the word *blaho* when discoursing about the Creator, the Sacral World, and reflections of the sacral in profane human life. In such contexts he uses *blaho* as a philosophical concept. 2) Skovoroda reserves the term *dobro* for the profane sphere, while describing things that are positive from a moral point of view. In such cases, the semantic field of the word is clearly defined, though it can hardly be called a philosophical term. 3) The common, conversational application of *dobro* does not have clearly defined boundaries and as such it does not represent a discrete concept. 4) When translating Skovoroda’s works into other languages, it is desirable to select the closest equivalents of each term. For example, the Greek κάλλος (τὸ κάλλον) or τὸ εὖ and the English *Everyday Good* are good analogs for *dobro*. On the other hand, the Greek τὸ ἀγαθόν and the English *The Highest Good* or *The Ultimate Good* closely render *blaho*.

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Keywords: *dobro*, *blaho*, lexeme, terms, philosophical concept, early-modern Ukrainian language, Hryhorii Skovoroda

INTRODUCTION

Research into the formation processes of a language's conceptual apparatus is productive and useful for many scholarly disciplines, such as the history of language and culture, as well as historical anthropology. It is especially fruitful in the study of philosophical thought. An understanding of how semantic fields, as well as individual words, terms and concepts were formed helps scholars in the reading of ancient texts. Such an understanding is essential for translators of historical sources who need to capture semantic nuances and relate the original to modern audiences without perverting the meaning of the original.

This chapter is dedicated to the problem of formation of Ukrainian philosophical terminology in the Early-Modern period. The main focus is on the difference between two nouns, conveying two different notions of “the good”: *dobro* and *blaho*. In contemporary everyday speech these two words function as synonyms, but in philosophical and theological tracts each one is a discrete term with its own specific context and rules of usage. To complicate matters, most modern European languages, as well as their learned predecessor—Latin—have only one word for both terms: *bonum* in Latin; the good in English; *gut* in German; *dobro* in Polish, and so on¹. This complicates the translation of Ukrainian philosophical texts. Rendering both *dobro* and *blaho* as *bonum*, *the good*, *gut*, *dobro*, etc., erases the semantic difference between the two and produces an inaccurate translation. This is especially true of texts that rely on the play of words highlighting the distinction between these two as separate phenomena.²

The formation of Ukrainian philosophical terminology in the Early-Modern period was greatly influenced by Old Church Slavonic, Greek, Latin, and Polish. Among these, only Greek and Old Church Slavonic have multiple names for the phenomena, which are designated as *dobro* or *blaho* in Old Ukrainian, as well as modern Ukrainian. In Greek they are τὸ ἀγαθὸν, τὸ κάλλος, τὸ χρηστὸν, τὸ εὖ, ἡ ὥρα. In Old Church Slavonic they are *doŭro* and *blaŭzo*. This allows us to assume that the intellectuals of the Kyivan Metropolitanate³ saw the need to distinguish between *dobro* and *blaho* and to separate their semantic fields from the ancient traditions of Eastern Roman theology. The fact that these old Byzantine roots were still present in their language in Early Modernity suggests that at the initial stages of its formation (till the middle of 17th century at least) Ukrainian theological and philosophical thought was under the considerable impact of Greek tradition. Therefore, despite the palpable dominance of Latin influences on Old Ukrainian traditions of philosophical writing, the Greek factor should not be neglected. The texts written by Hryhorii Skovoroda in the second

¹ Exceptions here are Greek and Russian. In Greek there are five terms that may be used in similar ways: τὸ ἀγαθὸν, τὸ χρηστὸν, τὸ εὖ, τὸ κάλλος, ἡ ὥρα. Russian uses the same words – *dobro* and *blago* – but their semantic fields slightly differs from those of Ukrainian equivalents.

² This is exactly what happened in otherwise high quality English translations of works by Hryhorii Skovoroda. Further in this chapter I am going to analyze one of these translations.

³ I use the term Kyiv Metropolitanate in reference to the Ruthenian lands of the Polish-Lithuanian Commonwealth within their boundaries in the 16th and 17th centuries. These territories were slightly more expansive than the modern Ukrainian state.

half of the 18th century support this view. His language is a very unique and harmonious admixture of Old Ukrainian, Old Church Slavonic and Russian. However, when he needs to further dissect (in his own words, “to chew at the meaning” of) some difficult concepts, Skovoroda turns to either Latin or Greek, organically intertwining them in his texts.

HISTORIOGRAPHY

A rigorous study of any philosophical theory or the views of any thinker needs a detailed analysis of word-usage in the relevant texts. This is a time-honored approach and I need not expound my methodology in detail. Here, I would rather focus on preceding research on scholarly language formation in Early-Modern Ukraine. Let me first note a recent successful project directed by Barbara Cassin, titled *Dictionary of Untranslatables. A Philosophical Lexicon* [Cassin, 2004]. This is one of the grand projects in the field of semantics that deals with the formation and usage of philosophical terms in multiple European languages. This work, especially in its Ukrainian redaction, informs my methodological approach and is a great source of factual information. In her Introduction, Barbara Cassin states that the language problem poses one of the prime challenges for European scholars in the humanities. This is not only a theoretical issue, but also a practical one. Mutual understanding is one of the key factors in any communication. But how do we achieve this understanding when our philosophic lexicons are so diverse? Maybe, it is possible to find one dominant language in this inter-lingual polyphony, something akin to Latin in earlier times? But this is hardly possible in a world where the pluralism of cultures, thought and manner of thinking is a preeminent value. Instead, Barbara Cassin proposes translation as a mechanism of agreement among the philosophical languages of different nations. However, since a direct literal translation does not work in every case because of the peculiarities of each individual language structure, scholars often have to work on finding the best interpretation of the original, rather than its closest equivalent. Such a task demands a specific manner of treating the philosophical text, one that would allow the study of semantic fields for every single word in every single language.

Significantly, Cassin’s project, originally realized in French, today has already been translated (or is being translated) into English, Arabic, Spanish, Portuguese, Romanian, Persian and Ukrainian. Each of these new editions represents a research project on its own, each one broadening the original version by adding more and more new source languages, new synonyms and different equivalents for many terms, etc. For this chapter, I have relied on the Ukrainian redaction of the *Dictionary*, edited by Kostiantyn Sihov and Andrii Vasylychenko [Cassin & Sihov, 2009]. While working on the Ukrainian version, the authors not only searched for the best way to adapt “European philosophy” by the Ukrainian linguistic apparatus, they also conducted an analysis of their native intellectual tradition. As a result, they are preparing an additional fifth volume, which will be fully dedicated to Ukrainian philosophical language. The question of semantic differences between *dobro* and *blaho* will be covered there in a special article.⁴

⁴ The fifth volume of the Ukrainian edition titled *Slovnyk ievropeiskykh filosofii: leksykon neperekladnostei* [Dictionary of Ukrainian Philosophy: Lexicon of the Untranslatable] is to be published in 2018.

Sihov's and Vasyl'chenko's large project is only the first specialized work in this field. Such questions as the history of philosophical terminology and its formation, the semantics of certain concepts, terms, notions in Old Ukrainian, and history of their development are all still considered marginal by Ukrainian historians of philosophy. This despite the fact that today Western scholars are pursuing such topics. Fortunately, there are many Ukrainian scholars in cultural, linguistic and historical studies, who are seriously interested in analyzing the semantics of specific terms and concepts within multiple disciplines, including philosophy. The results of their research are worth mentioning here. For instance, there is Hanna Dydyk-Meush' and Olena Slobodziauk's interesting linguistic study of Old Ukrainian scholarly vocabulary, titled *Ukrainian Landscapes of the 17th -18th centuries: Word, Text, Vocabulary* [Dydyk-Meush, 2005]. This work provides a detailed analysis of Old Ukrainian words used to describe different natural objects and landscape elements. The authors emphasize the fact that many homonyms, used in both old and modern Ukrainian, significantly differ in meaning. Therefore, such words have to be treated with special care when found in Early-Modern sources.

Then, there are concepts connected to some definite values, which have been thoroughly studied, because they are still widely used in historical, cultural and political debates. These are *Otchyzna*, an Early-Modern term that roughly corresponds to Latin *patria* and modern Ukrainian *Bat'kivshchyna* or *Vitchyzna*. Then, there are the modern proper names for Ukraine and Ukrainians (*Ukraina* and *ukraïntsi*). There are a number of interesting studies dedicated to semantic fields that could work for these terms in Early-Modern Ukrainian political discourse. Their authors include: Serhii Bahro [Bahro, 2015]; Larysa Dovga [Dovga, 2012]; Natalia Iakovenko [Iakovenko 2009, Iakovenko 2012]; Maksym Iaremenko [Iaremenko, 2012]; Zenon Kohut [Kohut, 2004]; Serhii Plokhii [Plokhii, 2005; Plokhii, 2006]; Frank Sysyn [Sysyn, 2006]; Tetiana Taiirova-Iakovleva [Taiirova-Iakovleva, 2013].⁵ Along with the aforementioned work by Dydyk-Meush and Slobodziauk, these texts clearly illustrate how the sense of certain terms could change in time and how radically it can differ from the modern one. For example, *otchyzna* was initially a term designating a land or property gained through inheritance; later it entered the political context with a noticeable shift in meaning; and only since the middle of 17th century it became constantly used in reference to the Hetmanate, i.e., the Early-Modern Ukrainian State.

In a number of studies on the history of ideas in Early Modernity the same analytical methodology was applied to analyze terms from the moral sphere, such as *chest'* (honor), *sumlinnia* (conscience), *shchastia* (happiness), *virnist'/zrada* (loyalty/betrayal), *chesnota/provyna* (virtue/ fault), *hrikh/tsnota* (sin/purity), *znannia/prostota* (wisdom/simplicity), etc.⁶ [Bondarevs'ka, 2005; Dovga, 2012; Korzo, 1999; Spivak, 2016; Zema, 1997; and others]. In these works the authors show that the meaning of the given words, as well as the sense and connotation of the concepts behind them, depended on several key factors. In addition to the time frame when a certain text was composed, these scholars also pay special attention to its function as a possible factor in semantic change. The most important part of the investigations concerning such terms as *Otchyzna*, *Chest'*, *Znannia*, *Svoboda* considers the manner in which semantic changes correlate with shifts in the mentality of the Ukrainian elite in the 17th and

⁵ For a detailed historiography of this topic see: [Bahro, 2013].

⁶ The English terms used here and further as equivalents of the Ukrainian originals are inexact and highly dependent on the context.

18th centuries. My own work includes studies about the semantic fields of the terms *dobro* and *blaho* as they were used in theological texts published in the Kyiv Metropolitanate during 17th century [Dovga, 2016a; Dovga, 2016b; Dovga & Olishchuk, 2016].

Before turning to the results of my own studies, I should present a historiography of Hryhorii Skovoroda and his writings. The scholarship devoted to his biography and intellectual legacy is really impressive. His works have been the focus of scholars, writers and journalists for more than 200 years now, and the list of all studies dedicated to him constitute a voluminous tome [Ushkalov, 2002]. I will only mention the literature that directly informed the making of this chapter⁷. The most important items here are the monographs by Maria Grazia Bartolini [Bartolini, 2010; Bartolini 2015], Karen L. Black [Black, 1994], Dmytro Chyzhevs’kyi [Chyzhevs’kyi, 2003], Lidia Hnatiuk [Hnatiuk, 2010], Oleksa Myshanych [Myshanych, 1994], George Y. Shevelov [Shevelov, 1994], Bohdan Strumins’kyi [Strumins’kyi, 1994] and Leonid Ushkalov [Ushkalov, 2007]. All of them address Skovoroda’s use of language. Although these works are rather general and the authors do not go deeply into the details of certain cases, they pose a number of interesting questions: How did this Ukrainian intellectual experiment with vocabulary? Why did he sometimes neglect the “purity” of his own language and mix it with Old Church Slavonic and even some peculiar Russian choices [Shevelov, 1994, p. 129]? What was the purpose of using several different ways to write a single word? Did Skovoroda give the shape of the word a meaning equal to its sense?

Each Skovoroda text has multiple layers of meaning. It conceals numerous secret senses that can be understood and interpreted in a myriad of ways. His colloquies are usually based on a dichotomy of terms, on the contrast between different senses conveyed in the same word and the diverse images associated with them. His interlocutors aim for the Truth as an ultimate value, but their ways of finding and realizing this Truth is based on different concepts. In some cases, all these diverse paths lead to finding a single word, the Right Word that would fully cover the meaning of the whole moral lesson, which is the object of the colloquy. This Right Word, as a real treasure, can only appear in the very end of the text. Thus, to understand the author’s message, the reader has to identify it clearly and get its meaning properly. There are numerous investigations in the fields of philosophy, cultural studies, history and theology, aimed at finding these treasures and decoding the messages of Skovoroda’s writings. Among the authors, I should name Maria Grazia Bartolini [Bartolini, 2014; Bartolini, 2017]; Iryna Bondarevs’ka [Bondarevs’ka, 2005]; Hryhorii Bilaniuk [Bilaniuk, 1994]; Dmytro Chyzhevs’kyi [Chyzhevs’kyi, 2003]; Archbishop Ihor Isichenko [Isichenko, 2013]; Georg Kline [Kline, 1994; Kline 1997]; Myroslav Popovych [Popovych, 2008]; Natalia Pylypiuk [Pylypiuk, 1990]; Olena Syrtsova [Syrtsova, 2014]; Leonid Ushkalov [Ushkalov, 2001], and Taras Zakydal’s’kyi [Zakydal’s’kyi, 1965]. Without their general works my analysis of certain individual terms would simply lose its point.

Finally, I have to mention two main source publications, which have made my research more feasible, namely *The Complete Academic Collection of Hryhorii Skovoroda’s Writings*, edited by Leonid Ushkalov [Skovoroda, 2011] and *Online Concordance to the Complete Works of Hryhorii Skovoroda* [Pylypiuk, 2008], created by Natalia Pylypiuk, Oleh Ilnytzkyj and Serhiy Kozakov as an analytical tool to the texts within the *Collection*. This last study

⁷ For further reading I recommend two historiographical works: [Bartolini, 2009; Dobko, 2007].

makes all the nuances and variations of Skovoroda's linguistic games available for a detailed scholarly investigation.

PRIMARY SOURCES

I have analyzed the following thirteen works, as they appear in the aforementioned *Online Concordance to the Complete Works of Hryhorii Skovoroda* (Pylypiuk, 2008) and *The Complete Academic Collection of Hryhorii Skovoroda's Writings* [Skovoroda, 2011]:

- *Besida 1, narechennaia Observatorium*. [Conversation 1]
- *Besida 2, narechennaia Observatorium. Specula. Ievreisky: Sion*. [Conversation 2]
- *Besida, narechennaia Dvoie: o tom, cho Blazhennym byt' lehko*. [Conversation The Two]
- *Blahodarnyi Erodii*. [Herodius]
- *Bran' archystratyha Mykhaila so Satanoi u sem: lehko byt' blahym. Borba i pria o tom: Pretrydno byt' zlym, lehko byt' blahym*. [Dispute]
- *Dialoh, ili Razhlahol o drevnem myri*. [Dialog or Discourse]
- *Dialoh. Imia emu: Potop Zmiiin*. [The Serpent's Flood]
- *Knyzhechka Plutarkhova o spokoistvyi dushy*. [Plutarch]
- *Knyzhechka o chtenyi sviashchen(naho) pysaniia, narechenna Zhena Lotova*. [Lot's wife]
- *Knyzhechka, nazyvaiemaia Silenus Alcibiadis, syrigh Ikona Alkiviadskaia*. [Alcibiades Icon]
- *Kol'tso. Druzheskii razhovor o dushevnom myri*. [The Circle]
- *Narkiss. Razhlahol o tom: Uznai sebe*. [Narcissus]
- *Razhovor piaty putnykov o istynnom shchastyi v zhyzni* [A Conversation]

To provide a more general historical overview of the semantic fields of the concepts *dobro* and *blaho* I also studied the language of several other 17th century texts published in the Kyiv Metropolitanate. All of these texts appeared in Old Ukrainian or Old Church Slavonic, although some of them represent translations from other languages:

- *Likarstvo na ospalyi umysl cholovichyi...* (Ostrih, 1607). [Anonymous, 1607]
- *Dioptra* (Vievis, 1612). [Anonymous, 1612]
- *Homilies on all Epistles of St. Paul the Apostle* (Kyiv, 1623) and *Homilies on the Acts of the Apostles* (Kyiv, 1624) by John Chrysostom [Chrysostom, 1623; Chrysostom, 1624]
- *Commentary on the Apocalypse* (Kyiv, 1625) by Andreas of Caesarea [Andreas of Caesarea, 1625]
- *A Slavonic-Ruthenian Lexicon and Explanation of Proper Names* by Pamvo Berynda (Kyiv, 1627) [Berynda, 1627]

- *Myr z Bohom choloviku* by Innokentii Gizel’ (Kyiv, 1669) [Gizel’, 1669]
- and a collection of sermons by Antonii Radyvylovskiy, titled *Vinets’ Khrystov* (Kyiv, 1688) [Radyvylovskiy, 1688]

OBJECTIVE AND METHODOLOGY OF THIS STUDY

This chapter endeavors to determine with maximum possible precision the semantic fields of the terms *dobro* and *blaho* as they are used in Hryhorii Skovoroda’s philosophical works. My goal is to help researchers address important practical problems that arise when interpreting and translating the legacy of this prominent Ukrainian author.

Primarily, I wish to develop a method that is applicable when approaching and interpreting Skovoroda’s writings on a micro level. This method should lead from understanding specific words to determining the meaning of certain phrases and, consequently, clarifying the message of entire texts.⁸ This approach coincides with one of the main approaches of Skovoroda, who himself analyzes many texts. He once proposed a treasure will not be found externally, but rather internally, within the Self.

My work follows on the footsteps of the microanalyses, conducted by many preceding scholars, who have:

- (a) identified the sources of Skovoroda’s writings, his inspiration, and the factors that influenced his general views;
- (b) identified the quotes in his texts, both direct and concealed, as well as the analogs he might have found in the mystical, philosophical and theological traditions of Western Europe, and
- (c) conducted detailed analyses and interpretation of discrete topics, motives and symbols that appear in his works.

My attempt at deconstructing the concealed meanings of Skovoroda’s texts “from below,” through individual word analyses will not replace the methodologies that are being used in this field. But I do believe that it represents a new and useful, supplementary point of view.

Let me outline the main stages of my work, which have led to the proposed conclusions:

1. I began with statistical calculations, by looking through the thirteen texts I selected and noting all the instances where any form of terms *dobro* and *blaho* is used. Then I performed a frequency analysis for each term.
2. Then I studied all the contexts in which terms *dobro* and *blaho* appear, classifying the semantic fields of both terms and separating them into two categories: quotidian usage, where they are simple words (e.g., *dobro nam zdi* – [it] has done good for us), and scholarly, where they function as philosophical or theological concepts (e.g., *sotvory Blaho* [create the Good], or *Trudna Dobrota* [Difficult Goodness]). Further on I analyzed these two categories separately.

⁸ I rely on the theory of Vladimir Propp, who proposes that words are the materials out of which the whole system of meanings of the text is built. [Propp, 1998].

3. Since one of the characteristic features of Skovoroda's philosophy is its dichotomous approach, I also selected all the opposing pairs for both terms (*blaho/zlo*, *dobro/zlo*, *dobro/lykho*, *dobre/lukave*⁹, etc.). They were statistically calculated and analyzed in their multiple contexts as well.
4. There is one other term that is very important for Skovoroda as a name of positive phenomena: *shchastia* (happiness). It is frequently combined with the concepts *dobro* and *blaho*; therefore, I also calculated and contextualized such combinations (*blaho/shchastia* and *dobro/shchastia*).
5. Based on the results of all aforementioned calculations, I made a chart of the principles by which Skovoroda used the lexemes *dobro* and *blaho*. The conclusions define the precise meanings the philosopher could give to these words and their dependence on different contexts.

SOME HISTORICAL BACKGROUND

Skovoroda's vocabulary was shaped under the influence of his linguistic environment. Consequently, even though he could imbue some words with new or additional meanings, his language remained the language of the Early-Modern Hetmanate and Sloboda Ukraine. For the sake of his audience, he had to adhere—to some extent—to their norms of word usage. It is conceivable that the philosopher wanted his texts to be read and understood by the average reader. But he also wished his audience to engage in his play on words, to solve his linguistic riddles, and by doing so develop their intellect and ethical stance. Thus, before going into an analysis of *dobro* and *blaho* in Skovoroda's usage, we have to consider these terms in the more general context of Early-Modern Ukrainian common language. It must be noted at the outset that the word *blaho* was not used in Old Ukrainian, which relied on *dobro* to communicate all the possible meanings of "the good." In Old Church Slavonic, on the other hand, both terms were employed.

The study of theological texts published in the Kyiv Metropolitanate from the end of 16th till the first half of 17th century¹⁰ demonstrates the following basic principles of how terms *dobro* and *blaho* were applied at the time:

1. The word *blaho* was not used in Old Ukrainian texts. It was always replaced with the word *dobro*. At the same time, texts written in Old Church Slavonic used both *blaho* and *dobro*.
2. The choice of lexeme in both cases depended not only on the linguistic situation, but also on whether the text was written in the low, medium or high style.
3. In Old Church Slavonic texts:
 - (a) the noun *blaho* and other words beginning with a "blah-" stem dominate over the term *dobro* and its derivatives
 - (b) the noun *blaho* and the adjective *blahe* are reserved for the high style; they are usually used in the context of sacred matters

⁹ *Zlo* and *Lykho* are semantically close terms that designate evil, trouble, misfortune, etc.

¹⁰ This is merely an outline. For further details see: [Dovga, 2016a; Dovga, 2016b; Dovga & Olishchuk, 2016].

- (c) the noun *dobro* and the adjective *dobre* are employed in profane matters, in reference to quotidian objects and phenomena (in most cases they serve as synonyms for *zruchne* [comfortable], *korysne* [useful], *krasyve* [nice], *pryvablyve* [beautiful, beguiling], *iakisne* [high-quality], etc.)
 - (d) both *blaho* and *dobro* can be used as synonyms when they define certain virtues; but even in such cases *dobro* is never used within a strictly sacral context, it can only mark phenomena that are between the sacred and the profane
4. In Old Ukrainian texts:
 - (a) the word *blaho* is absent
 - (b) in translations from Greek and Old Church Slavonic *blaho* is still replaced with *dobro* even though the latter lexeme sometimes erases the boundary between sacred and profane spheres, which is present in the original texts. For instance, the Greek terms τὸ ἀγαθὸν/τὸ κάλλον which in Old Church Slavonic are respectively translated as *blaho/dobro*, in Old Ukrainian are rendered as *dobro/dobro*.
 - (c) in quotidian situations the term *dobro* can be altered by *zatsnost'* (nobility), *tsydnost'* (excellence), *uroda* (beauty), *potikha* (fun), *roskosh* (luxury) or other synonyms
 5. We can be quite sure that when the intellectuals of the Kyiv Metropolitanate wrote (or translated) a text in Old Church Slavonic they always reserved the special high-register field for the term *blaho*.
 6. The noun *dobro* functions as an equivalent of the term *blaho* in Old Ukrainian texts, but its semantic field remains blurred till the middle of 17th century. Consequently, in this period it cannot be considered a clearly defined philosophical or theological term or concept.
 7. In the first half of 17th century, the boundary between styles (or registers) of language, namely between high theological discourse and low daily one, was demarcated by several factors. One of them was the choice of language itself¹¹: the “sacral” Old Church Slavonic vs “common” Old Ukrainian. The other was the choice of certain words within each of these languages and the separation of terms close in meaning, depending on their sphere of usage.

Things changed in the second half of 17th century, as we can see from the analysis of texts published by the press of the Kyiv Caves Monastery (Pecherska Lavra). In that period the situation looked like this:

1. In Old Church Slavonic texts the segregation between semantic fields of the terms *dobro* and *blaho* becomes clear and strict. *Blaho* is only for the sacral sphere, *dobro*

¹¹ In the Early-Modern Kyiv Metropolitanate sacral texts and theological literature were translated, written and published in both Old Church Slavonic and Old Ukrainian, though the former was dominant. Among the works published in Old Ukrainian the most significant are: *Peresopnytsia Gospels* [PG, 2011]; the translations of John Chrysostom included in *Likarstvo na ospalyi umysl cholovychyi...* [The Remedy, 1607], and the *Didactic gospel* by Cyril Tranquill Stavrovec'kyj [Stavrovec'kyj, 1619].

for the vernacular sphere, and cases of vagueness and in-between contexts are almost completely gone.¹²

2. The term *blaho* enters into the sermons written in Old Ukrainian.¹³ It is used to describe phenomena of the sacral world or some of the sacral elements as they are incarnated in the realm of the profane.
3. The word *dobro* does not gain a precise, strictly determined sphere of usage. But, as statistical analysis shows, in sacral contexts the term *blaho* dominates now.
4. Old Ukrainian vocabulary gradually develops a semantic differentiation between theological discourse and daily spoken language. It acquires certain new words that come from the high register, namely theological and philosophical scholarly style, and at the same time remakes some of its usual words into terms with more or less clear definitions and contextual fields.
5. The term *blaho* is adopted into Old Ukrainian writings by the intellectuals of Kyiv in the 17th century and later in the 18th. It functions as the term that draws a conceptual line between the vocabularies of two registers. It separates the “high” style of the sacral language from the “middle” style used to explain the sacral to “simple” people.

Finally, texts written in the first half and the middle of the 18th century demonstrate that at that time the situation became more or less stable. In these texts both lexemes seem to gain their semantic fields in both Old Ukrainian and Old Church Slavonic languages. The term *blaho* (and adjective *blahe*) function as the characteristic of:

- (a) God and His Gifts;
- (b) treasures of the Upper World;
- (c) ultimate satisfaction of the moral needs of humans;
- (d) ultimate goals and absolute value of human life;
- (e) absolute perfection, highest moral values, balance and harmony of the soul;
- (f) occasionally to designate acts of charity;

The term *dobro* (and adjective *dobre*) are used to describe:

- (a) moral virtues and other positive traits of a person’s character;
- (b) acts of charity and a person’s will to perform them;
- (c) physical beauty and attraction;
- (d) wealth and material goods (in such cases usually in plural – *dobra*);
- (e) anything pleasant, comfortable, helpful in a usual profane life;
- (f) work well done or a person’s ability to perform it (as a synonym to *staranno* [carefully], *uvazhno* [attentively], *sumlinno* [conscientiously]);
- (g) positive features of natural objects (such as good grain, good horse, etc.);

¹² This tendency is already evident in the translation of the *Commentary on the Apocalypse* by Andreas of Caesarea, published in 1625 [Andreas of Caesarea, 1625], and becomes constant since *Myr z Bohom choloviku* by Inokentii Gizel’ (1669) [Giesel, 1669].

¹³ The first author to introduce this term to Old Ukrainian vocabulary was Antonii Radyvylovs’kyi (See: [Radyvylovs’kyi, 1676] and [Radyvylovs’kyi, 1688]). It appears that he perceived this term to be foreign in the Ukrainian language; thus, in some instances he specially describes and explains it to his flock. See my analysis in [Dovga, 2016b].

In instances where the moral virtues of human beings are discussed, the semantic fields of *dobro* and *blaho* may still intersect in Old Church Slavonic texts, while in Old Ukrainian almost every such case is covered with the term *dobro*.

Worthy of note is the manner in which these terms were used in the plural. In modern Ukrainian the word *blaho* has a standard plural form: *bláha*. But *dobró* has lost its plural and is used only in the singular. In Early-Modern Old Church Slavonic and Old Ukrainian, we see the opposite. The word *blaho* is hardly ever used in the plural, but the plurals of *dobro* – *dóbr* and *dóbra* – are rather common. This might result from the fact that the sacral world in early modernity was perceived as a unified, monolithic entity, while the profane sphere represented a multiplicity of detached elements.

BLAHO AND DOBRO: THE PROBLEM OF INTERPRETATION AND TRANSLATION

As already mentioned, the difference between the semantic fields of *dobro* and *blaho* becomes especially relevant when translating Ukrainian philosophical texts into languages that do not have the means to express their difference. In the case of Skovoroda’s works it becomes even more complicated because, in addition to the traditional semantic distinction of these two words, a translator also needs to consider the author’s specific word usage. Skovoroda sacrifices the general rules of Old Ukrainian language to convey the philosophical sense with which he imbues words. At some instances he picks a certain word according to the subtle nuances of its meaning in a specific context, to the semantic peculiarities of its specific form, or even its sound or graphical appearance. Such details lead him to ignore usual grammar rules and even erase the boundary among different languages (e.g., Old Ukrainian, Old Church Slavonic, and standard Russian). He transforms words into the strings of a musical instrument, depending on which he touches and meaning he selects, the music changes its tone, key and character. As George Y. Shevelov noted, for Skovoroda: “*verbal experimentation conveys the ultimate truth, and the web of words becomes an adequate means to express the wealth and intricacy of God’s manifestations in the visible word.*” [Shevelov, 1994, p. 113].

Skovoroda “plays” the strings of *dobro* and *blaho* with subtlety and care. Hence before presenting my analysis of his works in a wider perspective, I would like to provide a case study on his word-usage and attempts at its interpretation in English. As an example, I chose the translation by an excellent specialist whose scholarship is very sophisticated. This makes my example of misunderstanding between author and translator highly representative.

Let us consider George Kline’s translation of *Razhovor piaty putnykov o istynnom shchastyi v zhyzni*, titled *A conversation among five travelers concerning life’s true happiness* [Skovoroda, Kline 1965].

In this colloquy the term *blaho* is used twice as a noun; it is not used adjectivally or adverbially (e.g., *blaho*, *shcho* or *blahyi*); but there are 25 other terms that begin with the *blah-* stem, such as *blahovonnyi* (fragrant), *blahovistvuiut* ([they] glorify, praise), *blahodaryty* (to praise, to thank), *blahodarnost’* (gratitude), *blahodat’* (grace), *blahopoluchiie* (prosperity,

well-being), *blahoprystoinist'* (decency), *blahorodnyi* (noble, decent, faithful), *blahosloven* (blessed), *blahoslovliu* ([I] bless, praise), *blahoukhannyi* (scented).¹⁴

The word *dobro* appears in this text three times as a noun and twelve times as an adjective (*dobryi*), but the stem *dobro-* appears in only six cases, among them: *dobroditel'* (virtue, goodness), *dobroditel'nyi* (virtuous, righteous), and *dobroserdechnyi* (kind, good-hearted).

Now let us consider Kline's translation of the fragments where the nouns *blaho* and *dobro* appear. In Skovoroda's text there are three such moments, but Kline translates only two of them:

Original text by Skovoroda	English translation by Kline
Яков: ... Вить тое, что лучше всего, то и выше всего, а что выше всего, то всему Голова и Конец. Сіе главнѣйшее <i>добро</i> ¹⁵ названо у древних философов Окончаніем всѣх <i>добр</i> и верховнѣйшим <i>добром</i> . Кто ж тебѣ может развязать, что такое есть Край и Пристанище всѣх наших желаній? [A Conversation]	For what is best of all is highest of all, and what is highest of all is the head and crown of all. This chief good was called by the ancient philosophers the “ultimate good” and the “ <i>summum bonum</i> ”. But who can unravel for you the homeland and haven of all our desires? [Skovoroda, Kline 1965]
Григорій: Потому что не разумѣм, в чем оно состоит. Голова дѣлу то, чтоб узнать: Отсюда родится желаніе, от желанія иск, потом полученіе. Вот и <i>благополучіе</i> , сирѣч полученіе, что для тебе <i>благо</i> . [A Conversation]	Because we do not understand in what it consists. The chief thing is to discover the source of desire. Desire seeks something and then receives it. This is <i>well-being</i> , that is, the getting of what is <i>good</i> for you. [Skovoroda, Kline 1965].
Лонгин: Длячего ж не зваться Ему Миром и Мира имущю Крѣпостью, если Он показывает, гдѣ Мир, и побуждает к нему, находясь сам всему <i>благу</i> Началом и Источником? [A Conversation]	Kline omits this section.

Scholars usually note the dichotomous nature of Skovoroda's writings, and *Razhovor piaty putnykov o istynnom shchastyi v zhyzni* is not an exception. The fragments given in this table include two main lines of thought pursued by the interlocutors. One of them is framed within the sphere of earthly life, it is profane, simple and mortal, while the other one leads to the sacral sphere, to the world of sacred and eternal truth.

The first fragment comes from the beginning of the dialogue. It initiates a dispute on earthly values. The five travelers are pondering the problem of happiness: what is it, and where can it be found. Their first solution seems to be the most obvious one: happiness can be found through possession of something good and desirable; the happy person has a lot of *dobro*. But Iakov appeals to the “wisdom of the ancient philosophers” (Aristotle, perhaps) and draws attention to another concept. He supposes the existence of the preeminent or highest good. His interlocutors support this idea. Yet Iakov does not explain what is so special about this good that brings true happiness to the individual. Either he does not know it, or he is not willing to reveal his knowledge yet. In this part of the colloquy the disputants limit their

¹⁴ Most of these words have synonyms that are not derived from *blaho*. Some examples from the *Lexicon* by Pamvo Berynda: *blahovisitiiie: dobraia povist'*; *blahodareniiie: diakovaniie, dobroie podiakovaniie; blahodarnyi: podiachlyvyi, vdiachnyi; blahodaru: diakuii; blahodat': laska; blahopoluchiiie: shchastie; blahoslovliaii: dobre movliu, khvaliu, vyslavliaii; blahoukhaniie: vdiachnyi zapakh* [Berynda, 1627, colum. 6-11].

¹⁵ In this table, all *italics* are mine – L.D.

search of happiness to the boundaries of the profane sphere; they only discuss earthly lures, such as high offices, riches, estates, intellect, beauty, health, fame, strong family, loyal friends, etc. But none of these can be possessed in absolute fashion. There is always going to be someone richer, wiser, healthier than you. It is difficult to imagine someone in complete possession of all of these. Moreover, experience shows that wealth, fame, beauty and the like frequently lead people to moral degradation, propelling them to evil deeds that can cause misfortune in private and social life.

Once the discussion about these issues is exhausted, Hryhorii initiates a new line of thought. He proposes to look for a real, True Happiness, not the fictitious one they have been seeking thus far. What they need is to abandon the land of profane, animal passions and turn to the path of moral development, which leads toward the Divine Wisdom and Light. This is the moment in the text where the "preeminent place" of *dobro* cedes to *blaho*. Skovoroda does not use any modifiers with the term *blaho*. He has no need to qualify it as "prime," "highest" or "ultimate," because it is already an absolute concept. Worthy of note is the manner in which Skovoroda changes his references here. When he has Iakov speak about *dobro*, he labels it as the "highest good" and cites the "ancient philosophers." But once the conversation turns to *blaho*, he introduces symbols taken from the Bible. Thus, the author distinguishes even more vividly the profane field of *dobro* from the sacral field of *blaho*.

For this reason, in this first piece of the text Skovoroda allows Iakov to use neither the term *blaho*, nor any Greek or Latin words. This part of dialog is set among "simpletons," the common folk, so the language has to have a suitable register. Kline's English translation of this fragment does not recognize this semantic difference. Kline could not find a proper English equivalent that would express the difference between *okonchaniie vsikh dobr* ["the highest level of all goods"] and *verkhovniishie dobro* ["the highest good"]. Therefore, he translated the first as "ultimate good" (which could have worked had he not made Skovoroda's plural concept of disunited "goods" into a singular "good"), while replacing the second with a Latin term. This usage of Latin contradicts the conceptual meaning of the whole text. At first, it might appear that the author himself had used this Latin term. The use of Latin automatically "upgrades" the language from common, daily speech to a "higher" register that creates an association with the sacral sphere. This association then confuses the readers, because at the beginning of the colloquy Iakov does not as yet address such matters. His mention of the "highest good" as *verkhovne dobro* (not *blaho*) is a powerful hint. It foreshadows the existence of a sacral sphere, but neither Skovoroda's characters nor the readers are invited to visit the sacred world yet. Quite the opposite, these hints merely initiate a long process of searching. The readers are going to dwell on detailed explanations for a good part of the text before they could reach the full understanding of the high sacral concepts. However, the English translation spoils the process by revealing the goal of the discussion at the very beginning of the text, prematurely simplifying the journey toward understanding.

The second fragment in the table argues that none of the earthly lures can make a person happy because they are not stable; a human being could never rely on any of them. The only thing that is really stable and reliable is a life in union with God. To live with God in your heart is the only way to gain true happiness. Happiness is *blahopoluchchiia*, which means acquiring the things that impart real *blaho* on a human being. This is the first place in this colloquy where Skovoroda replaces the term *dobro* with the term *blaho* to show the transition of the "good" under discussion from the profane to the sacral sphere. Here the readers'

journey takes them to the frontier, the place where the profane meets the sacral, the mortal meets the eternal, the human meets the Divine, the *dobro* meets the *blaho*. But the English translation does not make it clear, since “well-being” and “good for you” which are meant to express *blahopoluchchiia* and *blaho* cannot show this transition in any way. They are not distinct from the “ultimate good” which is used for *dobro*. The English equivalents used here are so quotidian that they draw this segment of the text back to the usual, profane world. Thus, the translation loses the deep didactic and philosophical sense intended by the author.

The last of the aforementioned fragments is fully dedicated to *blaho*, i.e., the true value, to which “(the Creator) himself is the Reason and the Source” (“[Творець є] сам всьому благу Началом и Источником”). It also emphasizes on the wholeness of *blaho*; this is why it is expressed in the singular “*vsionu blahu*,” not in the plural. “*Vsim blaham*” (plural) would not be possible for Skovoroda. Special attention is given to the omnipresence of *blaho*: it is a constant part of the whole of Nature. But in the English translation this part is just absent.

There is one more detail, which is prominent in the original text but lost in translation. The two discourses formed by the contexts of two terms – *dobro* and *blaho* – are connected by some elegant transitions, and so are the two worlds they represent – profane and sacral.

One of these transitions is the notion of happiness, *shchastia*. The ways Skovoroda uses this term and its possible meanings in his works may be the topic of an entire new chapter. Noteworthy here is the role of *shchastia* as a destination about which the debates in *A Conversation* turn. The concept of absolute happiness, which is the goal of life of any normal creature on Earth, serves to visualize the boundary between *blaho* and *dobro*. Therefore at the very end of the discussion the travelers agree that *blaho* is almost equal to *shchastia*, whereas *dobro* stands very far from both of them. It is not even on the way to either.

The second transition between the two spheres is constructed by composite words, e.g., “Вот и благополучіе, сирѣчь полученіе, что для тебе благо.” These words of Hryhorii could be roughly translated as follows: “Here you find well-being, which means the being that is well for you.” Both “well-being” in the main clause – *blahopoluchiie* – and “well” in the subordinate clause – *blaho* – are formed with the stem *blah-*. Therefore, this “well-being” cannot be simply replaced with Ukrainian *shchastie* (happiness), which is formally its synonym, as Pamvo Berynda’s *Lexicon* states. *Blahopoluchiie* is not just happiness caused by the good conditions of life. *Blahopoluchiie* is the state of receiving *blaho*, which in Skovoroda’s *Dialog* means entering into a unitive exchange with the Creator. I suppose, this is the reason why we find so many words with the *blah-* stem in this text. Usually this peculiarity of Skovoroda’s vocabulary is explained by the impact of Old Church Slavonic and Russian on his language. But, this is reductive reasoning. They are written with a definite purpose, i.e., to show the presence of the Divine in a human being’s daily life. Fragrant things are called *blahovonni*, the fresh air is referred to as “*svitlyi i blahovonnyi vozdukh*” that brings joy to people, whereas the scented smoke (*blahoukhannyi*) rises to the Creator. All those who smell like true *blaho*, their smell elevates the human spirit and delivers it to the God. A similar situation pertains to such terms as *blahodarite*, *blahodarnost’*, *blahodareniiie*. They all express gratitude in some way, but in Skovoroda’s text they can not be taken as synonyms of Ukrainian *diakovaniie*, *podiachlyvyi/vdiachnyi* or *diakuiu*, even though these words are also directly translated as “thanks”, “grateful” and “thank you.” When the philosopher uses these composites with *blaho* he refers to the transfer of *blaho* from the sacred sphere to earthly life, when human express thanks to the Lord for his Grace. This is not about the simple “thanks” that we say to each other every day. When Skovoroda wants to speak about positive things in

our daily life or the positive features of a man, he uses the term *dobro* or its derivatives. For example “*k dobromu dilu*” is applied to a good business, “*dobryi konets*” to the good end, while “*dobryi liude*” means “good people.” A number of similar composite words—like *dobroditel’nyi* or *dobroserdechnyi* (could be translated as virtuous, righteous, kind)—refer to some specific ways in which people can be “good.” Skovoroda uses the *dobro*- stem words much more rarely than the *blaho* compounds, since the human world makes only a tiny part of the Great World made by the Creator.

BLAHO AND DOBRO IN THE CONTEXT OF SKOVORODA’S COLLOQUIES

As my analysis of the *Razhovor piaty putnykov o istynnom shchastyi v zhyzni* shows, this text makes a strict distinction between two types of “the good.” The term *blaho* is reserved for the sacral sphere and the reflections that God’s Grace makes on human life, while the term *dobro* is mostly used to describe the profane realities of the earthly world. But does such a distinction work in all of Skovoroda’s writings? Could one claim that he confers these two Ukrainian words with certain permanent semantic fields and thus entitles them to represent specific philosophical concepts? To answer these questions I propose to analyze a wider selection of his texts and see if this rule is true for all of them.

First, let us turn to statistical data. In the selection of 13 works that I have studied,¹⁶ the term *blaho* appears altogether 98 times: as a noun it appears 15 times; as an adverb 15 times; as an adjective (*blahyi* in three gender forms and two numbers) 68 times. There are 140 cases of *dobro*: as a noun it appears 24 times (once in a diminutive form *dobretsa*); the noun *dobrota* (a derivative, meaning “kindness”) appears 12 times; as an adverb *dobro/dobre* appears 10 times; as an adjective *dobryi* (in three gender forms and two numbers) 94 times.

As we can see, in Skovoroda’s works, the general usage of the term *dobro* in its multiple forms predominates significantly over the term *blaho*. Yet, when one reads these texts, *dobro* is far less visible than the numerous compounds utilizing *blaho*. The analyzed texts give us 324 examples of the latter, while there are only 21 terms combined with *dobro*. I will propose an explanation of the possible reasons for this later in this chapter.

Hryhorii Skovoroda used the term *blaho* as a philosophical concept with a strictly determined semantic field. Analysis of the listed texts demonstrates it very clearly. He only uses this term in the context of something sacred, be it the sacral world itself or the narrow “borderland” where the two worlds intersect and where the ultimate meaning of human life can be found. If an individual or a society attempts to imitate the Divine, thus bringing some sacred elements into the profane world, such efforts are also defined as *blaho*. Here I would like to provide a more detailed illustration of how the semantic fields of *blaho* work in Skovoroda’s texts. With this purpose in mind, I list the examples of different applications of this term in accordance with their contexts:

1. *Blaho* works directly as an alternative name for the Creator or as His symbol: *Сеї єсть один родник неисчерпаемый всему благу и блаженству нашему, он сам*

¹⁶ See the list of these texts in the Primary Sources section of this chapter.

- есть оное блаженство, безвиновное НАЧАЛО ... Сія высочайшая вина всеобщим именем именуется БОГ¹⁷ [The Circle]; Кто благ? или кто мил, кромѣ Бога? [Conversation The Two]; ...Она есть Лѣствица, Все возводящая к Богу. Он Един благ и Един высок. [The Serpent's Flood]; ...не благѣй ли Дух? а Дух благѣй не тожели, что БОГ? ... кромѣ Бога, ничтоже Благо [Lot's Wife].
2. *Blaho* is associated with the Creator through the mediating notion of Nature¹⁸: Природа Благая есть Всему Начало и без нея Ничтоже бысть, еже бысть БЛАГО. [Herodius].
 3. *Blaho* characterizes the Upper World and its creatures: Великая и благая Дума Есть-то Главный Ангел, вѣсть благая, Совѣтъ прав... [Conversation 2].
 4. *Blaho* expresses the idea of the direct impact of God: Сіе Иго велми Благо и Легко есть... [Conversation The Two]; Иногда, де, во убогом Домикѣ, исполненном Страха Божія, Друг Роду Человѣческому Благо рождается ЧЕЛОВѢК, ... яко не Красота Мыра сего, ни Тварь кая-либо, но едина Благодать Божія Благому Рожденію Виновна бывает. [Herodius].
 5. *Blaho* expresses the presence of God's Will in certain earthly phenomena, usually a person's deeds or thoughts: Однак благая во мнѣ дума [Conversation 2]; ...как всякое благое Дѣло в зачатіи и в коренѣ горкое... [Conversation 2]; Двѣ суть Главныя Родительскія Должности сіи: "БЛАГО родить и БЛАГО научить [Herodius]; Воспитаніе же истекает от Природы, вливающія в Сердце Стѣмя Благія Воли... (Herodius); ...здравая и мирная душа благія пристрастности любит..." [Plutarch].
 6. *Blaho* defines the highest value as the ultimate goal of a human being's life: Вся испытайте, благая же пріемлите [Conversation The Two]; Сыне мой! ... учися единыя Благодарности. ... Ты рожден еси Благо, и сія Наука есть Дщерь Природы твоя... [Herodius]; БЛАГА МУДРОСТЬ ... паче же видящим Солнце [Icon of Alcibiades]

In the above quotations the term *blaho* can probably be replaced with the Greek equivalent τὸ ἀγαθόν and translated in English as "Highest Good" or "Ultimate Good."

The application of *dobro* and its derivatives in these texts has many more diverse semantic fields. First of all it works as an adaptation of *blaho* for realities of the profane world, which makes this high concept easily understandable for simple people. An example of such usage can be found in Herodius: "Ничтоже бо есть Бог, точію СЕРДЦЕ Вселенныя, наше же Сердце нам же есть ГОСПОДЬ и ДУХ. Сіе Домашнее они свое БЛАГО со Временем узнав и плѣнився Прекрасною ЕГО Добротою, не станут безобразно и бѣсновато гонитися за Мырскими Суетами..."[Herodius]. *Dobro* may also stand for the positive characteristic of earthly phenomena. It defines profane things, deeds and ideas that are appropriate and truthful. In such instances, it might be seen as a reflection or a shadow cast by *blaho* into the world of human beings. Yet *dobro* can also gain negative

¹⁷ Here and subsequently, I quote Skovoroda only in the original, for fear that any translation of his sophisticated play on words can be unclear or, at best, misleading. The orthography and formatting of the original is preserved.

¹⁸ Almost all of the scholars who study the philosophy of Skovoroda point out that he tends to treat Nature and the Creator as equal notions. E.g.: [Bilaniuk, 1994; Chyzhev's'kyi, 2003; Kline, 1994; Kline, 1997; Popovych, 2008; Ushkalov, 2001]. Yet the linguistic analysis of this specific feature remains undeveloped.

connotations and stay in opposition to *blaho*. Skovoroda frequently turns to the word *dobro* when speaking about the elements (e.g., wealth, health, physical beauty, high offices, manors and lands, intellect, fame, power, etc.) that people erroneously confuse with aspects of true happiness. In fact, this is the main difference between *blaho* and *dobro*. The former is always real and is eternal. The persons who do *blaho*, want *blaho*, struggle for *blaho*, aim at *blaho* in their life are always right. Such persons cannot be mistaken, their path is truthful, therefore they cannot possibly be let down or cheated. The reward is waiting at the end of their difficult journey. *Dobro*, on the other hand, may be fake, deceptive and temporary. *Dobro* is plural and it seems to provide many alternative ways in life. But the person who falls into temptation and chooses *dobro* over *blaho* is in fact cheating the self. Trapped by earthly passions, such a person is bound to loose more and more life energy while accumulating more and more needless *dobra* (pl.), and finally gets frustrated. This road leads a person toward complete unhappiness, away from God and his *blaho*.

Let us have a closer look at the different contexts where Skovoroda employs the term *dobro*. Again, I list the examples according to their semantic fields and possible implemented connotations:

1. An element of the sacral world, God's creation or the secret knowledge of God ("fundamental *dobro*"): *На сіе доброе свое дѣло взирал ВЫШНІЙ добрым своим Оком*. [Icon of Alcibiades]; *Сіи суть добрыя дѣвы...* [Conversation 2]; *...от сих же Источников раждается двойный вкус в Библии: Добрый и Лукавый, спасительный и погибельный...* [Conversation 2]; *ДОМ БОЖІЙ. ... что добро, и толь красно, яко ДОМ ЕГО?* [Conversation 2]; *Добрый и злый Ангел приставляются в рожденіи каждому чловѣку...* [Plutarch]; *... называя ЗДБ остающихся Людми, вѣдущими ДОБРО и ЗЛО, каков, видно, был Адам, изгнанный из Рая*. [The Serpent's Flood].
2. Something positive, praiseworthy, desirable, charitable, truthful: *Τό κάλλος χαλεπὸν ἐστί. Трудна Доброта* [Conversation The Two]; *Вот тебѣ от мене награда! За твое доброе Слово!* [Conversation The Two]; *...имѣть Дома, внутрь себе, все свое некрадомое Добро* [Herodius]; *Наше Добро во Огнь не горит, в Водѣ не тонет, Тя не тлит ...* [Herodius]; *Добрыи Плоды, приносиміи Богу* [Herodius]; *Фортуна ... над истинным добром твоим не имѣет власти* [Plutarch]; *Тогда сердце дѣлается доброю нивою, падает и пріемлется ВѢЧНОСТИ Зерно* [Lot's Wife].
3. A positive feature of a person or a natural phenomenon, also a sign of harmony between a person and human nature: *Поговори еще мнѣ о добрых Птицах* [Conversation The Two]; *Рожденнаго на Добро не трудно научить на Добро...* [Herodius]; *Как же не противно разуму бѣситься и мучиться тѣм, что не всѣ тѣ добрыи и вѣжливы, с коими нам жить довелось?* [Plutarch].
4. Praiseworthy moral deeds: *За добрую же славу лучше желает Павел умиръ* [Conversation 2]; *Если Совѣтъ добр, то и плоды добрые...* [Lot's Wife].
5. Its negative meaning can be discerned where the earthly world's vanity, false aims, delusions abide: *Оно Глупомудрым Сердцам видится Добром, по Естеству же своему есть лукавое*. [Dialog or Discourse]; *Конечно, сей Змій есть тот же, что нашенгал Евѣ, будто у Смертнаго Древа добрый Плод* [The Serpent's Flood]; *...есть нещасливая душа, щастіе свое на пѣску стихійном основавшая*

и утвердившая себя, что можно добро свое сыскать внѣ Бога ... По сему видно, что все свѣтское добро нѣсть добро; оно сокрушается... [The Circle].

Finally, there is one more important element which helps to define the semantic distinction between *dobro* and *blaho* in Skovoroda's works. This is the way he chooses antonyms for each of term. Since the dichotomous approach is one of his most usual philosophical instruments this detail cannot be omitted from my analysis.

In all analyzed texts there is only one antonym for *blaho* – *zlo* (evil). It appears in eleven out of eleven antitheses. A couple of examples will suffice: “Ангел благій и злый... благій и злый Дух” [Conversation 2]; “Уклонися от зла и сотвори Благо” [Conversation on The Two]. In contrast to *blaho*, the term *dobro* has a lot of antonyms. The first and most frequently used is the noun *zlo* and the adjective *zlyi*; it appears thirteen times in the texts (e.g., “Таков, аще себѣ Зол, Кому добр будет?” [Herodius]; “Добро и Зло, Нищету и Богатство Господь сотворил и слѣпил во ЕДИНО” [The Serpent's Flood]). The second most used word pair is the noun *lukavstvo* and the adjective *lukavyi*, which could be approximately translated as “wicked” or “cunning.” These can be seen in such cases, as “лукавое и доброе, лжа и Истина” [Conversation 2] or “видится Добром, по Естеству же своему есть лукавое” [Dialog or Discourse]. The total number of such cases is nine in all texts. But I also found such antitheses as *dobryi* – *smertnyi* (mortal): “будѣто у Смертнаго Древа добрый Плод” [The Serpent's Flood]; *dobroe* – *durnoie* (bad): “Будѣто чрез нея ... дурное случилось или нѣчто доброе не досталось” [Plutarch]); *dobryi* – *pustyi, khudyi* (vain, shallow); *dobroe* – *rastlinnoie* (corrupted, immoral) and a many others. The opposition between *dobro* and *zlo* is fundamental. This refers to that eternal struggle between good and evil, which generates the dichotomous nature of our world and always forces humans to make a choice. However, the opposition between *blaho* and *zlo* has another meaning. It could also be interpreted as the war of Good and Evil. In this case both words are capitalized, since this pertains to concepts of the high register. *Blaho* with its antagonist *Zlo* is used to speak about the God's wisdom and His Will in the struggle against demonic Evil. In fact all applications of *zlo*—with *blaho* or *dobro* being its antonym—convey the concept of evil as a matter of choice. The term *zlo* never refers to a mistake or a delusion, but always to the conscious decision a person makes within the struggle between Light and Darkness, between God and the Dark Forces. This decision is principal for the author and must be understood as such by his readers. In cases where Skovoroda posits *lukavstvo* as an antonym of *dobro* he is speaking about a mistake, a situation when a person was cheated by his/her human passions. The importance of making a decision is also present in this context: a person has to choose *dobro*. But it appears that this is not a principal matter with *lukavstvo*. All other antonyms of *dobro* bring us to matters of daily life, they are mostly descriptive and do not bear any philosophical or ideological weight.

CONCLUSION

Many more examples could be used to shed more light on the nuances of the semantic differences between *dobro* and *blaho*. But the analysis I have provided allows me to draw a few conclusions:

1. Hryhorii Skovoroda defines a clearly limited field of usage for the term *blaho*. He reserves it for topics concerning the Creator, the Sacral World, and the reflections of certain sacred phenomena in the human world in the form of true absolute values and ultimate goals. This term is not used to describe the moral virtues of a human being or any deeds motivated solely by the human will. These strict contextual limitations convince us that the term *blaho* functioned as a definite philosophical concept in Skovoroda’s system.
2. This conclusion is supported by the vast number of compound words that begin with the *blah-* stem in Skovoroda’s works. The presence of God in human life and the projection of His Will into the earthly world are “visualized” by some symbolic events or images. Such reflections or shadows of the Sacral can be seen through the *blah-* elements, which affect certain profane objects. This is how we get *blahopoluchiie* (literally “the receiving or gaining of *blaho*,” meaning well-being, prosperity), *blaho-darnist’/blahodareniie* (literally “the giving of *blaho*,” meaning gratitude), *blaho-rodstvo* (literally “the innate *blaho*,” meaning righteousness, faithfulness, also nobility, but in moral terms rather than nobility of birth), and so forth.¹⁹ These derivatives of *blaho* could be called the terms of the intersection. Their semantic fields lie within the boundary where the sacral and the profane worlds meet.
3. In Skovoroda’s texts, the lexeme *dobro* is applied only to the earthly world. Even in cases where it is used to describe or explain the term *blaho*, it does not serve to complete this high concept in any way. The *dobrota* (“goodness”) of *blaho* may occur when the text addresses simple human beings whose imagination is limited by the profane sphere, and therefore the sacred notion has to be explicated in a way accessible to them. *Dobro* is also used to define highly moral human deeds, as well as other positive and praiseworthy aspects of daily life. This is a likely explanation for a comparatively small number of *dobr-* stem words in the philosopher’s vocabulary. A logical conclusion here would be that *dobro*, as well as *blaho*, has a strictly determined semantic field, and it is out of the philosophical terminology used by Skovoroda. In other words, *dobro* is not a concept; it is just a descriptive word.
4. The word *dobro* is often used in the context of daily life as part of colloquial language. Here its senses are rather blurred and diverse, but again it is definitely not a special term.
5. According to Skovoroda’s vocabulary, one could place *blaho* in hierarchical dominance over *dobro*. At the same time *dobro* —together with its analogs *dobrota*, *dobrist’* and the like—are clear, accessible and desirable for every human being. Meanwhile *blaho* is connected with moral advancement and development, and so may become difficult to obtain. Therefore the *dobrist’* – goodness and need – of

¹⁹ This what Skovoroda says on this matter: *Развѣ же То не Тожеде есть: Благое чествовать и Благій Дар за Благо почитать? Благочестіе чествует тогда, когда Благодарность почитет за Благое. ... Благочестность есть Дщерь Благодарности. Сыне мой! ... учися единья Благодарности. ... Ты рожден еси Благо, и сія Наука есть Дщерь Природы твоя ... Благодарность же есть Твердь и Здравіе Сердца, приѣмлющаго Все во БЛАГО и укрѣпляющагося. ... Во Благодарности (рече) так сокрылося всякое Благо, как Огнь и Свѣтъ утаился во Кремешкѣ. [Do you think that there is no Tozhda: Honor to honor and Good Gift for the Benefit to read? Piety is honored when Gratitude honors the Good. ... Piety is the Daughter of Gratitude. My son! ... learn the same Thanks. ... Thou art born a blessing, and this Science is the Daughter of Nature is yours ... Gratitude is Tverd and Health of the Heart, thanks to All in BLESS and in Ukrainian. ... In Gratitude (speech) every Good has been concealed, as Fire and Light hid in Krymeshk] [Herodius]*

blaho is not necessarily obvious. Sometimes it has to be especially explained to the people who are captured by love for earthly attractions, pleasures, profits and other advantages.

6. Concerning the translation of Skovoroda's oeuvre, it is important to note the contexts of his word-usage can give us an idea of how to find the best equivalents. I suggest that the closest analogy of *dobro* would be the Greek terms κάλλος (τὸ κάλλον) or τὸ εὖ, and in English the Everyday Good. For *blaho* I would propose to use the Greek term τὸ ἀγαθόν and English the Highest Good or the Ultimate Good.
7. The demarcation line between *blaho* and *dobro* that we see in Hryhorii Skovoroda's works is also present in most of the philosophical texts of the 17th century written in Old Ukrainian. *Blaho* is always truthful and reliable, for it belongs to the Creator; it can be performed only by His Will and Grace, and serves as a kind of emanation of the Sacred into the profane sphere. *Dobro* may be true if it is an earthly analogy of *blaho*, but it may also be fake; it may appear to be positive and useful while really being wrong and evil. Such imaginary *dobro* or "individual *dobro*" that is aimed at personal, temporary needs might prove to be evil for the others (or for society) since it does not contain absolute *dobrist'* for everyone. In many cases it leads a person to *zlo*, which may be followed by death.

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Publications from the Last 5 Years:

Books:

- [1] *The value system in the Ukrainian culture of the second half of the XVII century (on the basis of theoretical heritage of Inokentii Gizel)* [Система цінностей в українській культурі другої половини XVII ст. (на прикладі теоретичної спадщини Інокентія Гізеля)] – Kyiv – Lviv: Svichado, 2012 – 344 p.
- [2] *Inokentii Gizel. Selected works in 3 volumes: V. 1 (Book 1-2), V. 2, V. 3* [editor, author of the introductory article, compiler of scientific reference system Larysa Dovga] – Kyiv – Lviv: Svichado, 2009 – 20012; 624 p., 358p. 460p., 450p.

Articles:

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Chapter 20

MORPHOLOGICAL VERSUS PHONOLOGICAL AWARENESS IN CZECH READERS: A CASE OF TRANSPARENT ORTHOGRAPHY

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ABSTRACT

The aim was to investigate the relationship between morphological awareness and reading in a language environment which is phonologically transparent and morphologically challenging, i.e., the Czech language environment. The sample consisted of 171 typically achieving elementary school students (3rd to 6th graders). Morphological awareness and phonological awareness both had comparable influence on reading across all age levels, from the lowest (3rd graders) to the highest (6th graders). Morphological awareness affected reading speed and accuracy more than phonological awareness. Paradoxically, morphological awareness affected reading comprehension less than phonological awareness – authors interpreted this to be due to superficial reading style which manifested itself regardless of student age, gender or IQ. Implications for improvement of reading were discussed.

Keywords: morphological awareness, phonological awareness, transparent orthography, reading comprehension, reading speed, reading accuracy

INTRODUCTION

The focus of morphological awareness is on morphemes, i.e., the smallest meaningful word parts. Morphological awareness is characterised as the ability to identify the morphemic structure of words, identify morphemes and manipulate them, and classify words according to

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their collective meaning (i.e., teach, teacher, teaching) or according to their morphemic structures (i.e., teacher, farmer, driver) and thus create word families. In the last 10 – 15 years there has been a surge of interest in morphological awareness, with researchers showing interest in the relationship between morphological awareness and reading acquisition. The reason is the inherent nature of morphemes as elemental bearers of the word meaning – morphological awareness is studied in relation to understanding (Carlisle, 2000). The contribution of morphological awareness to decoding was confirmed by Carlisle and Stone (2005). For example, two-syllable words equal in frequency were more easily decoded when composed of morphemes in contrast to words composed of one morpheme only (i.e., *shady* vs. *lady*; *hilly* vs. *silly*). Carlisle and Fleming (2003) demonstrated that 1st graders were already sensitive to the morphemic structure of words, and decoded words using morphemes. This finding was most recently confirmed by, i.e., Wolter, Wood, and D'zatko (2009) and Berninger, Abbott, Nagy, and Carlisle (2010). Readers were stimulated to use morphological decoding when the words were phonologically transparent. That is, where the root word was intact in the derived word, students read words such as *growth* and *warmth* more fluently and accurately than *health* and *fifth*. Clin, Wade-Woolley, and Heggie (2009) used the term *morphophonology* to refer to the interaction between these skills or their facilitatory effect on reading. Deacon and Kirby (2004) concluded that morphological awareness uniquely influenced reading pseudowords. The contribution of morphological awareness to reading pseudowords was surprising because pseudowords carry no meaning. Their findings challenged the assumption that reading pseudowords was mainly dependent on phonological awareness, and showed that children perceived pseudowords as morphemic units. The contribution of morphological awareness to reading pseudowords was also confirmed by other authors, i.e., McCutchen, Green, and Abbot (2008). McCutchen et al. (2008) suggested that morphological awareness in reading words or pseudowords was facilitated by recognition of their orthophonological structure even without the presence of the semantic aspect. Semantic decomposition only occurred when orthophonological mapping was complete.

Morphological awareness in its implicit form is observable in children who are just beginning their schooling and probably occurs even in pre-schoolers (Carlisle & Fleming, 2003; Wolter, Wood, & D'zatko, 2009; Berninger, Abbott, Nagy, & Carlisle, 2010). Sensitivity to morphemic word structure seems to be an advantage that facilitates reading development. Conversely, a lack of sensitivity is a block in the reading development. The influence of morphological awareness on reading increases with school age (i.e., Arredondo, Ip, Ju Hsu, Tardif, & Kovelman, 2015; Deacon & Kirby, 2004; Mahony, Singson, & Mann, 2000). In their longitudinal study, Berninger, Abbott, Nagy, and Carlisle (2010) concluded that effective reading acquisition requires an interplay of all three components of linguistic awareness: phonological awareness, morphological awareness and orthographic knowledge. Using growth curve analyses, Berninger et al. (2010) showed that phonological awareness and orthographic knowledge increased the most during early days of schooling, while the acceleration of morphological awareness was spread out over the first three to four years of schooling, and some components of morphological awareness (derivative morphology) continued to increase significantly even after this time. Although morphological awareness began developing soon after a child began schooling, its overall development trajectory had a much longer range than other components of linguistic awareness. Studies on the unique and significant contribution of morphological awareness on reading ability sparked efforts to train morphological awareness and thereby improve reading and spelling (for review see Carlisle,

2010). In their meta-analysis, Goodwin and Ahn (2010) summarised results of 17 independent studies which investigated the effect of morphological instruction on literacy outcomes in students with literacy difficulties. Overall, morphological instruction caused significant improvement in literacy achievement. Rather than exercises focused exclusively on morphological skills, morphological exercises were much more effective when part of comprehensive intervention, i.e., in addition to morphological training, a course may also have included exercises on phonology, vocabulary, style and syntax. Goodwin and Ahn (2010) showed that morphological training significantly improved phonological awareness. Both linguistic aspects were connected and difficult to separate. Improving one aspect also improved the other. Goodwin and Ahn (2010) argued convincingly that morphological training should be utilised in addressing reading and spelling difficulties, and their prevention.

Czech vs. English and Reading Acquisition

Just like English, Czech is also a morphophonemic language. The spelling system utilises sound units (phonemes) and semantic units (morphemes). Although English is characterised as a non-transparent language which places high phonological demands on the reader, Czech with its high consistency is “phonologically friendly” – the letter corresponds to the sound, which is written as it is pronounced. While English is said to be morphologically simple, Czech is the opposite. Thanks to phonological transparency, Czech 1st graders read coherent texts fluently and with comprehension in the first half of the 1st grade. A proven method is the analytic-synthetic method of teaching reading, which is applied to about 95% of all children (CSI, 2014). It is based on the fact that Czech spelling is essentially phonological. As the term suggests, it combines the analytical process (i.e., the decomposition of words into syllables and phonemes) and the synthetic process (i.e., joining letters into syllables and words). In early reading practice pupils at start with reading separate syllables and after this stage pass to reading of whole words. While practicing a new letter, the relevant word is deduced from speech. The word is further analysed into syllables and sounds, which are then assigned to letters. The synthetic stage includes joining letters into other syllables and words, and later also writing these words. Children are simultaneously taught reading and writing and familiarise themselves with all the written forms of sounds – the correlation of reading and writing is an essential feature of this method.

Owing to the nature of the Czech language and the relatively rapid development of reading skills in a typically developing child, reading tests are not just lists of words, but coherent texts that are administered in the first half of the 1st grade. Reading speed seems to be the best measure of reading level in an individual child. Typically developing Czech children make very few mistakes when reading continuous texts (about 1-2% in 4th, 5th and 6th graders; see Matejcek, 1998). The correlation between the number of incorrectly read words and reading speed is very low. This means that fast readers do not make more errors on average than slow readers (Matejcek, 1998). The average Czech child reaches socially acceptable level of reading in the second half of 2nd grade or in the first half of 3rd grade (Matejcek, 1998); it means that a child is able to read coherent texts fluently, quickly enough and without mistakes (the number of words read correctly per minute is about 60 to 65 on average, and the percentage of error around 1-2). A child can read children’s books for pleasure and also interact with the textbook.

Czech morphology is complicated. A rough outline is offered in the supplementary material.

The Aim of the Present Study

Research has already provided evidence that morphological awareness plays an important role in reading acquisition in English-speaking children. We decided to undertake this study because morphological awareness in relation to reading has not yet been investigated in the Czech Republic. We asked ourselves whether morphological awareness exercises any effect on reading in the Czech language environment. Owing to the nature of Czech, which is characterised by higher morphological complexity than English, it is expected that the impact of morphological awareness on reading in Czech will be greater than in English. Another reason for this hypothesis is high grapheme-phoneme consistency of Czech. The research shows (Carlisle 2000; Carlisle & Stone 2005) that pupils spontaneously use their phonological skills to identify morphemes. When conditions are favourable (i.e., phonological transparency), pupils naturally apply the morphological strategy when decoding words and they are trying to identify the word through its morphemes. Because the Czech language is transparent, this characteristic will, among Czech readers, naturally stimulate morphological strategy to a greater extent than in English.

METHOD

Participants

The participants were typically developing elementary school pupils ($N = 171$, 93 boys, 78 girls) ranging from 3rd to 6th grade (3rd graders $n = 59$, 4th graders $n = 37$, 5th graders $n = 48$, 6th graders $n = 27$). This age range was chosen in order to use an identical test. Czech children begin attending school at the age of 6 years. This means that 3rd grade included 9-year-olds and 6th grade included 12-year-olds. All participants were monolingual Czech speakers; Czech was the mother tongue of both the children and their parents. Neither neurodevelopmental disorders (intellectual disability, communication disorder, autism spectrum disorder, attention-deficit/hyperactivity disorder, motor disorder, specific learning disorder) nor trauma- and stressor-related disorders, disruptive, impulse-control, and conduct disorders, problems related to family upbringing, child abuse and neglect were documented in the participants. The participants were healthy, without serious pediatric finding. The participants came from seven elementary schools in four regions (South Bohemia, West Bohemia, Central Bohemia and Highlands/Vysocina, In Czech/). All participants were learning to read through the analytic-synthetic method. All children came from middle class families. The Czech Republic is highly homogeneous in terms of ethnic composition. The data were collected in the years 2014 to 2016.

Measurements

Reading

Reading was measured using a standardised test (Matejcek, Sturma, Vagnerova, & Zlab, 1992) and defined as a reading quotient (RQ). RQ is a standard score that is comparable to the IQ score and is based on the number of correctly read words per time unit. Speed and accuracy are merged into one complex parameter “number of correctly read words per time unit”, because Czech children read with high accuracy from the very beginning of reading development (Kucharska et al., 2015; Matejcek, 1998; Matejcek, Sturma, Vagnerova, & Zlab, 1992). The RQ in the Czech language environment (i.e., a phonetically highly consistent orthographic system) largely correlated to comprehension (Matejcek, 1998). For this reason, the comprehension test was not standardised in the Czech environment. Absence of the comprehension test was therefore not a substantial drawback, even though its application would have been enriching.

Each pupil read aloud a text containing 245 words. The investigator registered: a) the total time required for reading the entire text, and b) the number of words read incorrectly. When the pupil finished, the investigator verbally administered 22 questions with which he assessed reading comprehension. The pupil had no chance to see the text again. For example, the pupil read a part of the text saying: “A procession of aged animals came along to the sovereign of underground, the mole.” The investigator asked: “Who came along to the mole?” If the child answered: “A procession of aged animals”, the answer counted as 1 point. The answer: “A procession of animals” earned the child half a point. Reading comprehension was expressed by a number of points: a pupil could receive a maximum of 35 points, i.e., perfect and detailed understanding of the read text.

Morphological Awareness Task

This was constructed for the purpose of this study and has not yet been standardised in the Czech Republic. In terms of content validity, we based our test on information about Czech morphology found in the elementary school curriculum. Its structure has been described in section Supplementary Material. The test was administered individually without time restrictions. There was always a practice question for each question which tested a particular morphological phenomenon and this was followed by the test itself. The subject could receive a maximum of 65 points where 1 point was equal to 1 correct answer. Split-half reliability: $r = 0.897$ ($N = 171$, $p = 0.000$).

Phoneme Analysis and Synthesis

Matejcek’s diagnostic task (1993) was used. In the analytical part of the task, the investigator told the child a real word and asked the child to divide the word according to letters and to maintain their order, i.e., pes (= dog) $\rightarrow$ p – e – s. In the synthesis part of the task, the investigator divided the word into letters while maintaining their order, and the child was then supposed to pronounce the word. In both parts, there were 10 words with 1 or more syllables. Performance was evaluated as follows: if the child responded correctly in its first attempt (i.e., it divided the word or put the word together correctly), it received 2 points. If it failed in its first attempt, the investigator repeated the word. If the child succeeded in dividing the word or putting it together successfully in its second attempt, it received 1 point. If the

child failed in its third attempt, it received 0 points and the investigator moved on to the next word. It was possible for the child to acquire a maximum of 20 points in the analytical task and 20 points in the synthesis-based part.

Phoneme Deletion

This test consisted of two sets of monosyllabic pseudowords (Caravolas & Volin, 2005). Each set contained 10 pseudowords. The first set contained pseudowords with CCVC structure, while the second set contained pseudowords with CVCC structure. All pseudowords respected Czech phonotactic rules and were easily pronounceable. Each tested child heard a pseudoword, repeated it and was then asked to omit one letter and pronounce the new pseudoword. In the first round of tests, the child was asked to omit the second letter (i.e., flin-fin), while in the second round of tests it was the second last letter (i.e., rulp-rup). The maximum score was 20.

Spoonerisms

Caravolas and Volin's diagnostic test (2005) was used. The test consisted of ten pairs of monosyllabic pseudowords. The structure of the first two pairs of words was CV, while the structure of the remaining eight pairs was CVC. Pseudowords used in this test and in the previous Phoneme Deletion Test respected Czech phonotactic rules. During the administration of the current test, the child heard a pair of pseudowords and was asked to repeat them, and was then required to transpose the first two letters and say the new word (i.e., nor-sep, sor-nep). The maximum score was 20.

Intelligence

This was measured using Raven's Progressive Matrices (Raven, 2000). The tests were administered individually and without a time limit. The result was a score equivalent to the IQ of the individual.

Statistical Analysis

The dependence of rate (words/minute) and comprehension on the various explanatory variables were studied. Since we observed four phonological variables (word analysis, word synthesis, phoneme deletion, and spoonerisms) we first applied dimensional reduction on all phonological variables (phonological analysis, phonological synthesis, phoneme deletion, spoonerism) to reduce the dimensionality of this effect. Sliced Inverse Regression (SIR) (Li, 1991) with automatic choice of number of slices was applied to generate a smaller number of explanatory phonological variables. SIR generates linear combinations of variables that explain the variability in the response variable, which means that for each response variable (reading speed and comprehension) we generate different reduced variables. The first component of the SIR was used to generate the reduced number of explanatory phonological variables for each response variable, because only the first dimension appears to be significant in all cases. The reduced phonological variable together with grade, gender, IQ, morphological awareness and its interactions were further used in a linear stepwise regression to identify the model with the lowest Akaike Information Criterion (AIC) to examine the best

predictive model for reading speed and comprehension. All statistical analyses were conducted using the R software with the “dr” package for SIR (Weisberg, 2002).

RESULTS AND DISCUSSION

Table 1 presents descriptive statistics.

Table 1. Descriptive statistics – means, standard deviations and ranges

variable	<i>M</i>	<i>SD</i>	range
IQ/Raven’s progressive matrices (standard score)	109	14.8	73-148
Reading quotient RQ (standard score ^a)	98	10.7	81-147
Reading/number of correctly read words per time unit.	78	24.4	20-168
Reading/percentage of errors	2.7	2.8	0-29
Reading comprehension (raw score)	12.4	4.7	1-23
Phoneme analysis (raw score)	18	2.6	9-20
Phoneme synthesis (raw score)	17	3.7	4-20
Phoneme deletion (standard score)	99	16.9	54-121
Spoonerisms (standard score)	105	15.9	57-127
Morphological task (raw score)	53	13.8	19-79

Note: ^a RQ is a standard score that is comparable to the IQ score and is based on the number of correctly read words per time unit.

IQ of our sample was slightly above average compared to the population standard (i.e., 100); the difference was significant ($t = 8.48$, $N = 171$, $t_{.01} = 2.58$). The probable cause was a ceiling effect (skewness = - 0.529). The speed and accuracy of reading did not differ from population norm: the difference between the standard score RQ of our sample and the population norm was not statistically significant ($t = 1.82$, $N = 171$, $t_{.05} = 1.96$); average percentage of errors corresponded to the 5th and 6th stens in the age groups under the study (i.e., 3rd to 6th grade). Average RQ for the 6th, 5th, 4th, and 3rd graders amounted to 102, 97, 97, and 99, respectively; the differences have not reached statistical significance ($F = 1.23$, $df = 170$, $p = 0.302$). The number of correctly read words per minute varied across the age range of our sample; 3rd graders read an average of 62 words per minute, 4th graders of 75 words per minute, 5th graders 84 words per minute, and 6th graders of 105 words per minute. Differences were statistically significant ($F = 18.95$, $df = 170$, $p = 0.000$; 6th graders showed significantly higher performance than all other groups, 3rd graders reached significantly lower performance than all other groups; only the difference between 5th graders and 4th graders was not statistically significant).

To read independently for fun and self-education, a Czech child needs to attain a so-called socially acceptable level (Matejcek, 1998), i.e., at least 60 correctly read words per minute. In our sample, 43 children failed to meet this criterion (i.e., 43/171 → 25%); all 6th graders met this criterion; three 5th graders failed to meet this criterion (i.e., 3/48 → 6%, $M = 51$ words/min, $Me = 49$ words/min); nine 4th graders failed to meet this criterion (i.e., 9/37 → 24%, $M = 53$ words/min, $Me = 52$ words/min); thirtyone 3rd graders failed to meet this criterion (i.e., 31/59 → 53%, $M = 47$ words/min, $Me = 51$ words/min). The average

achievement in comprehension task throughout the sample amounted to 35%; the average achievement 39% in 6th graders, 38% in 5th graders, 32% in 4th graders and 34% in 3rd graders. The differences between the means of the whole sample and different age groups were not statistically significant ($F = 1.72$; $df = 341$; $p = 0.145$).

Phonological skills assessed by standardised deletion and spoonerism tests were within normal limits. The difference between the sample and population mean in deletion test was nonsignificant ($t = 0.537$, $N = 171$, $t_{.05} = 1.96$). The difference between the sample and population mean in spoonerism test was significant ($t = 3.67$, $N = 171$, $t_{.01} = 2.58$). The skills of phoneme analysis and synthesis are assessed as highly valuable for reading (i.e., Torgesen, Wagner, & Rashotte, 1998). A test of phoneme analysis and synthesis is used in the Czech Republic as a clinical tool, without standard scores. Results of the test of phoneme analysis and synthesis in our sample were satisfactory (i.e., 18/20 → 90% analysis achievement and 17/20 → 85% synthesis achievement and corresponded to the speed and accuracy of reading).

The average achievement in morphological awareness test throughout the sample amounted to 62%; (i.e., 53 points out of a maximum of 85). The success rate in 6th graders amounted to 74%; 68% in 5th graders; 60% in 4th graders and 54% in 3rd graders. Differences among groups were statistically significant ($F = 16.08$, $df = 170$, $p = 0.000$). The rise in achievement rate is attributable particularly to school education – Czech pupils acquire morphological knowledge throughout schooling at primary and lower-secondary school, i.e., for nine years.

Reading Speed and Accuracy (the Number of Words Read Correctly per Minute)

From the independent variables entered into the model (Phono R, Morpho, IQ, grade, genders and their interactions: grade x Phono R, grade x Morpho, gender x Phono R, gender x Morpho), the use of Linear Stepwise Regression led to the selection of three variables that best explained reading speed and accuracy: grade, Morpho and Phono R, see Table 2. Of these three variables, phonological awareness (Phono R) had the weakest impact on reading speed and accuracy. However, phonological awareness has fundamental influence on reading speed and accuracy, and our model does not deny the validity of phonological theory about the importance of phonological awareness on reading. Phonological awareness is a condition sine qua non for normal development of reading in alphabetical spelling, and therefore the Czech language environment. The Czech-British team of Caravolas, Volin, and Hume (2005) came to this conclusion by comparing predictors of reading in Czech and English students ranging from 2nd to 7th grade. Using structural equation models, they found that phonological awareness (phoneme deletion, spoonerisms) is a unique predictor of reading (rate, spelling and comprehension). Phonological awareness is comparable in its effects in both respects – English (inconsistent orthography) and Czech (highly consistent orthography), and among all age levels studied. A specific feature of the Czech language is its high transparency (Caravolas, Volin, & Hume, 2005; Matejcek, 1998) and its complicated morphology which, however, Caravolas et al. (2005) did not examine as a potential predictor of reading ability. Both high consistency and difficult morphology places different demands on Czech readers in comparison to English, which is characterised as less phonologically transparent and

morphologically simpler. This is also reflected in our model which focused on morphological awareness as being comparable in its level of influence to phonological awareness.

Table 2. Predictors of reading speed in the final model of a linear stepwise regression

variable	t value	p value
Grade	7.486	$3.88 \cdot 10^{-12***}$
Morpho	5.227	$5.09 \cdot 10^{-7***}$
Phono R	- 1.769	0.078

Note. Grade = 3rd to 6th grade; Morpho = morphological awareness; Phono R = reduced phonological variable. The reduced phonological variable Phono R together with morphological awareness, IQ, grade, gender, and its interactions were used in a linear stepwise regression to identify the model with the lowest Akaike Information Criterion (AIC) to examine the best predictive model for reading speed (words/minute). The final phase of the model included grade, Morpho, and Phono R.

Residual standard error: 16.54 on 167 degrees of freedom. Multiple R-squared: 0.5423, Adjusted R-squared: 0.5341. F-statistic: 65.95 on 3 and 167 df, $p < 2.2 \cdot 10^{-16}$

*** $p < .001$

Our model is a continuation of the trend (and corresponding with findings) observed by Carlisle and Stone (2005) in an English-speaking environment. According to Carlisle and Stone, English students are encouraged towards morphological reading strategy by the phonological transparency of words. Czech, as a highly transparent and morphologically rich language stimulates morphological reading strategy to a greater extent than English. Observations from the English language environment which contribute to the interpretation of our model include the fact that students perceive morphemic units not only in real words but also in pseudowords and that morphological awareness is activated at an early stage of reading, i.e., by orthophonological processing (Deacon & Kirby, 2004; McCutchen et al., 2008). It seems natural, therefore, that in a language environment which, by its nature, encourages students to utilise morphological reading strategy, morphological awareness could have a significant impact on the quality of reading at its lower decoding level and could facilitate reading accuracy.

Because our final model does not contain interaction of morphological awareness with age, we concluded that morphological awareness exercises strong and stable influence on reading speed and accuracy throughout the age range of our sample (from 3rd to 6th grade; i.e., from ages 9 to 12). Similar findings and reasoning applies to phonological awareness – not even in the area of phonological awareness did we find interaction with age in line with the findings of Caravolas et al. (2005). In an English-speaking environment, researchers observed in younger students strong influence of phonological awareness which was balanced by morphological awareness with increasing age (Berninger et al., 2010; Deacon & Kirby, 2004; Mahony et al., 2000). In contrast, in a Czech-speaking environment, the influence of phonological awareness and morphological awareness on reading was equal from an early age. These results could be explained by the different nature of each language which corresponds to different teaching methods when it comes to reading, and different reading development. Czech students are already able to read fluently and comprehend text in the first half of 1st grade, i.e., after 6 months of reading education (Matejcek, 1998).

The present study does not answer the question when morphological awareness begins to exert an effective influence on the development of the Czech reader. Hypothetically, we could

say that at the very beginning of instruction, possibly even in the preschool period. Support for the above hypothesis might be provided by a seven-year follow-up study by Lyster, Lervåg, and Hulme (2016) in the Norwegian language environment, which is relatively close to the Czech environment owing to similar phonological transparency.

The model showed the strong effect age has on reading speed and accuracy. Since we worked with gross scores, this effect is natural and expected. Younger readers are expected to read more slowly and less accurately than older readers who have undergone longer training. At the same time, our sample was selected from normal, typically developing readers attending primary school. Thanks to this, we were able to observe that reading speed and accuracy increased with age.

Comprehension as a Dependent Variable

Linear stepwise regression chose the independent variables entered into the model (Phono R, Morpho, IQ, reading speed, age, gender and their interactions: age x reading speed, gender x reading speed, age x Phono R, age x Morpho, gender x Phono R, gender x Morpho) two variables which best explained reading comprehension: phonological awareness (Phono R) and morphological awareness (Morpho), see Table 3. Phonological awareness is fundamentally important for decoding. The more advanced a reader's phonological awareness is, the greater the likelihood that his or her reading will be more accurate. Morphological awareness allows the reader to identify morphemes (bearers of word meaning). We might expect that in a morphologically challenging environment, such as the Czech language environment, morphological awareness will influence understanding to the same degree as phonological awareness. In the model (Table 3), however, phonological awareness influences understanding more than morphological awareness. This "shadowing" of morphological awareness can be explained by surface reading style. Czech children read less and less, have poorer vocabulary, simpler grammar and style (Zelinkova, 2009). If they have to read, this prevailing style or "zeitgeist" encourages them to read superficially which is characterised by decoding, i.e., speed and accuracy, while deeper understanding of what they are reading eludes them. Connor et al. (2014) mention a similar problem in English-speaking children.

This is when the primary role of morphological awareness is decoding, due to the overlapping of both abilities. This overlap was demonstrated by Goodwin and Ahn in their meta-analytic study (2010). The reciprocal relationship between these two abilities was also reflected in morphophonology (Clin et al., 2009). Thus, our students used morphological awareness mainly for reading on a superficial level, and this was due to morphophonology, and less for reading at a deeper level which required deeper understanding. The influence of age, gender, reading speed and IQ, and the interaction of phonological awareness and morphological awareness with age, gender, reading speed and IQ receded into the background in our model, and were not included in the final model. We cannot therefore say that older and more mature or smarter readers will better use context and understand the semantic depth of the text, compared to younger, less developed and less intelligent readers, who are expected to have more superficial understanding. The aforementioned reading style or "zeitgeist" probably influenced all students, regardless of age, gender, reading speed or IQ. This hypothesis is corroborated by the development of reader's decoding skills, expressed as the number of words read correctly per time unit, and by the development of understanding,

expressed as a gross score. While significant increases in the number of correctly read words per minute were observed in school-age children, increases observed in reading comprehension were low.

In addition to superficial reading style, under utilisation of morphological awareness in reading instruction may be another explanatory variable. Support for this hypothesis might be seen in a study conducted by Lyster et al., (2016) in Norwegian language environment. The authors trained one group of preschool children morphologically, another group phonologically; the third group went through the usual pre-school training in Norwegian kindergarten, i.e., without special training focused on phonological and morphological awareness. The authors then measured reading performance of the children at the end of the 1st and 6th grade of elementary school. They found that morphological training significantly improved reading comprehension in the first and sixth grade, while phonological training did not affect it. If this finding can be transferred to the Czech environment (both languages are phonologically more transparent and morphologically more demanding in comparison to English), it could support our interpretation of a potential in the teaching of reading provided by morphological awareness.

In their study, Lyster et al., (2016) did not find any facilitatory effect of morphological training on reading words in 6th graders, i.e., on the level of decoding. Their findings in this aspect differs from ours, see Table 2, i.e., morphological awareness in our children distinctly contributed to the speed and accuracy of reading. The results of Lyster et al., (2016) are explained by the ceiling effect in reading test, which was created for identification of weak readers. The ceiling effect probably contributed to poorer discriminatory sensitivity of the test. Although our test was not burdened by ceiling effect (degree of skewness in the number of words read correctly per time unit in the entire sample of children equaled 1.64), we arrived at a similar result as Lyster et al., (2016); morphological awareness which had not been systematically trained did not automatically contribute to reading comprehension. The authors do not explain their findings by a superficial reading style or insufficient application of morphological awareness in the teaching of reading. Given the similarity of the findings and the similarity of the two languages, Norwegian and Czech, we believe that the result could be – besides the ceiling effect – also affected by the superficial style of reading, or reading didactics.

Table 3. Predictors of reading comprehension in the final model of a linear stepwise regression

variable	<i>t</i> value	<i>p</i> value
Morfo	1.519	0.131
Phono R	- 4.040	$8.1 \cdot 10^{-5***}$

Note. Morpho = morphological awareness; Phono R = reduced phonological variable. The reduced phonological variable Phono R together with morphological awareness, IQ, reading speed, grade, gender, and its interactions were used in a linear stepwise regression to identify the model with the lowest Akaike Information Criterion (AIC) to examine the best predictive model for reading speed (words/minute). The final phase of the model included Morfo and Phono R.

Residual standard error: 4.497 on 168 degrees of freedom. Multiple *R*-squared: 0.1518. Adjusted *R*-squared: 0.1471. *F*-statistic: 15.04 on 2 and 168 *df*, *p*-value: $9.82 \cdot 10^{-7}$

*** *p* < .001

Explicit vs. Implicit Understanding and Reading Quietly vs. Aloud

In the present study, we tested explicit understanding, i.e., literal understanding, which is connected to information explicitly mentioned in the text and which is immediately processed while reading. Implicit understanding is associated with the ability of the reader to “read between the lines”, connect data with other information from other sources, as well as their own experience. Implicit understanding benefits from the context. Implicit understanding represents a deeper level of understanding and usually requires an interval in which the text is processed or read repeatedly. Kucharska et al. (2015) studied conditions under which understanding develops in 1st to 4th Czech graders. A slight prevalence of explicit over implicit understanding was found in continuous texts with contextual support when reading aloud; differences in the surveyed age range were not statistically significant. A significant increase in the score of implicit understanding was detected when 3rd graders were compared with 4th graders. Kucharska et al. suggested that implicit understanding compared with explicit started later. These findings by Kucharska et al. (2015) correspond to or support our findings presented in Table 3, and their explanation by superficial reading style, aimed at explicit understanding. The children in our sample read a story and read it aloud. Immediately after reading they were asked questions to check understanding. The variable best explaining their understanding was the phonological skill, despite the hypothetical predominance of the morphological skill, which would enable children to get semantically deeper. Kucharska et al. (2015) also observed a tendency towards superficial, explicit understanding in comparable reading conditions. When considering reading continuous text silently, Kucharska et al. (2015) found superiority of implicit understanding as early as the 3rd year of primary school. Prior et al. (2011) only observed this phenomenon in an English-language setting in older pupils: 1st to 5th graders benefit more from reading aloud. Starting with 7th graders, pupils begin to benefit more from reading quietly. The reason of this shift might be the nature of both languages: Czech is phonologically-friendly and therefore allows deeper understanding even to younger readers. In our study, we did not manipulate the mode of reading (loud vs. quiet). According to the findings by Kucharska et al. (2015) we could expect that this mode could affect the outcome presented in Table 3, increasing the effect of morphological variable on understanding. The favourable effect of silent reading on comprehension should occur, in accordance with Kucharska et al., especially in older children under study, i.e., 5th and 6th graders. Our final model should then reflect the interaction of morphology and age, but it did not. Therefore, we think that the orientation towards superficial reading style was stronger than the effect of reading mode (loud vs. quiet).

Reading style focussing on superficial vs. deep understanding is not only a neuropsychological function dependent on the development of the brain, but also on the conditions under which the pupil is educated. It would therefore be interesting to manipulate experimentally conditions of learning and set aside an experimental group within our sample that would go through the teaching of reading focussing on implicit understanding. In our sample, only the method of teaching reading was broadly monitored, i.e., all the children learned to read using the analytic-synthetic method that prevails in current Czech schools. Owing to the strong effect of morphological awareness on reading from at least the third year of elementary school onwards observed in our study, we deduce that Czech children are ready for a deeper comprehension earlier than children in the Anglo-Saxon environment, at least from the 3rd grade, possibly even from the 2nd year. This assumption could be verified experimentally. Our study may also be perceived as an incentive for further extension of

morphological training in kindergarten. Phonological training dominates in educating Czech preschool children, probably under the influence of the phonological theory. Preschool education could thus effectively shape predisposition to reading. Neuropsychological issues are unclear – i.e., in what stage of neuropsychological development is the preschool child's brain ready for systematic morphological exercises to be beneficial to the child and not a burden. This issue will have to be studied specifically for the Czech language environment, which is morphologically particularly challenging. However, it is the task for further research.

Prediction of Reading

In the present study, the relationship between morphological and phonological awareness in the Czech language environment was examined. The study revealed that the influence of morphological awareness on reading can be equivalent to the influence of phonological awareness. The limiting factor of our study is the absence of RAN-variable. Furnes and Samuelsson (2010) compared the predictability of RAN and phonological awareness in more transparent orthography (specifically for Norwegian and Swedish children) vs. less transparent orthography (US/Australian children). They examined phonological awareness and RAN in preschool children and observed them until the second year of elementary school. The authors observed that predictability of phonological awareness in a sample of Scandinavian children was limited to the first year of elementary school, while in the English-speaking children it persists into the 2nd year. RAN predictability is reliable in the 1st and 2nd year in both types of orthography, the more transparent and the less transparent. Their study is limited by the absence of morphological awareness. In agreement with our findings, we could assume that morphological awareness will have a similar role as RAN in more transparent orthography, i.e., it will be a significant predictor of reading and its predictability will not fall in contrast with phonological awareness. The conclusions of Furnes and Samuelsson are corroborated by the international study ELDEL (Caravolas et al., 2012), which compared the predictability of phonological awareness, knowledge of sounds and letters, and their correspondence with RAN in beginning readers of four different types of orthography (English, Spanish, Czech, Slovak). The authors found that the effect of predictors on initial reading was comparable regardless of the language environment. Unfortunately, even this study did not work with morphological awareness, and did not compare its predictability with RAN. According to our findings, it is possible to assume that the inclusion of morphological awareness could change their resulting model of initial reading, in which phonological awareness, orthographic knowledge and RAN contribute roughly equally. In languages with more transparent orthography and demanding morphology (Czech, probably Slovak or even Spanish), morphological awareness could be greater than in English-speaking children.

Normal vs. Subnormal Reading

An Austrian-British team compared Austrian and British dyslexics (Landerl, Wimmer, & Frith, 1997). German is considered a consistent orthography in contrast with English, which is significantly inconsistent. The authors presented the dyslexics with a test, which consisted of very closely similar words in both languages, i.e., jung – young, Sommer – summer, attraktiv – attractive. The test also included pseudowords, which are considered in an English language environment to be particularly useful for testing phonological skills, because they bear no meaning. Dyslexics can therefore not rely on semantics and must rely on phonological clues. The results showed that English dyslexics had massive difficulties with

phonological coding in contrast with Austrian ones. When reading, they made significantly more errors, both in meaningful words and pseudowords. In contrast, Austrian dyslexics were characterised by relatively high accuracy (both in reading real words and pseudowords) and their reading problems consisted in a slow reading pace. From the findings by Landerl et al., (1997) we can conclude that dyslexics in transparent German orthography, and generally in any transparent orthography, which includes Czech, have fewer difficulties with phonological clues, by means of which the words are processed. The requirement of phonological processing in a transparent orthography is easily achievable for most children; the normality of reading is accessible for most children in this orthography. Therefore, the relationship between phonological processing and reading is probably less clear in transparent orthography. It's very similar to an extremely easy performance test: If all children manage it, the test loses its distinctive ability to differentiate between below-average, average and above-average individuals. It is undesirable in the case of a test, whereas in the case of orthography it is, conversely, the desired state.

Our findings suggest that the importance of morphological and phonological skills is comparable. We can assume that the morphological features of dyslexia are likely to be less pronounced in the English-language environment, while in the Czech-language environment they will be highlighted by the nature of the Czech language. We can even expect a new type of dyslexia to emerge – besides the repeatedly confirmed phonological type it may be the “morphological” type, specific to a particular language and prompted by the specific difficulty of the given language environment. This hypothesis may be confirmed by fMRI findings. For example, Arredondo, Ip, Ju Hsu, Tardif, and Kovelman (2015) found that brain regions, which had previously been thought to serve only phonological skills, were activated in solving morphological tasks. If dyslexia is neurobiologically uniform and its manifestations are formed by the environment, as Arredondo et al. (2015) or Paules et al. (2001) suggested, then in a phonologically demanding and morphologically undemanding environment in which English-speaking dyslexics develop, morphological deficits recede into the background, while phonological deficits are getting into the foreground. Conversely, in the Czech language environment, morphological deficits in dyslexics can be striking.

CONCLUSION

In the Czech language environment, which is characterised by morphological complexity and phonological simplicity, morphological awareness affects reading development in 3rd to 6th graders of elementary school at the same level as phonological awareness does. This effect is independent of age, gender and IQ. It occurs at both decoding and understanding, where its effect is weaker than expected – probably due to the superficial reading style.

The study showed the important features of literacy – morphological awareness which still stands outside the scope of interest of teachers and psychologists in the Czech Republic and which is not sufficiently exploited and cultivated for the development of reading. It is paradoxical because the Czech language environment is particularly suitable for training morphological awareness. High level of phonological awareness encourages readers to employ a morphological strategy, enabling deeper penetration into the meaning of orthographic record. If superficial learning style is to be superseded, then focus on

morphological strategies in reading and morphological training represents one of the possible ways.

Our findings can be significant for diagnosis and training prerequisites of reading and predicting reading in preschoolers. In addition to existing cognitive variables (phonological awareness, IQ, vocabulary, working memory, RAN, knowledge of letters and orthographic processing) morphological awareness comes into play as a potentially important predictor as well as the reading prerequisite that in the Czech environment still stands in the background of interest in reading training.

The conclusion of the present study can be applied not only to typically developing readers, but also readers with impaired reading and spelling.

SUPPLEMENTARY MATERIAL

In morphology, we can distinguish three basic processes: inflection, derivation and compounding. The most commonly used process in Czech is inflection. Derivation is also of significant importance but compounding does not play any vital role (in contrast to German). In Czech, as in Finnish, inflection is very complex. This means that in Czech there is a prevalence of inflectional words which change their form depending on context, quite unlike non-inflectional words which do not change form. Inflectional words are names (nouns, pronouns and numbers), adjectives and verbs. Invariant words include adverbs, prepositions, conjunctions, particles and interjections. During inflection (i.e., the changing of the form of a word), one morpheme belongs to several grammatical categories at once; typically, it occurs as a word ending. During inflection (conjugation/declination), morphemic endings usually carry grammatical meaning, i.e., gender, number and case. In Czech, we distinguish seven cases (nominative, genitive, dative, accusative, vocative, locative, instrumental), dual number (singular and plural; only some nouns have dual form) and triple gender (masculine, feminine and neutral). In the masculine gender, we distinguish between animate and inanimate.

For each name, we must recognise its gender, number and case. Since names are distinguished according to seven cases in dual numbers, this means we have 14 forms for each word. Together, the shapes of one word constitute what is known as the morphological paradigm of the word. There are many such paradigms in Czech which can be divided into three categories: noun declension, pronoun declension and mixed declension. There is a different set of morphological paradigms for each type of declension. Noun declension is typical for nouns and has a total of fourteen different morphological paradigms. For each of the three noun genders, we use a different morphological paradigm: four morphological paradigms for the feminine, four morphological paradigms for the neuter, and six morphological paradigms for the masculine, of which four are masculine animate and two are masculine inanimate. In addition, there are similar sub-paradigms which differ from main morphological paradigms in the endings of some forms. Mixed declension is typical for adjectives, while pronoun declension applies only to pronouns. Each of these declension types has two morphological paradigms. These two declension types have a different system of morphological paradigms to noun declension. In noun declension, each noun has only one possible noun gender. On the other hand, in mixed and pronoun declension, each morphological paradigm has three variants according to gender. During the conjugation of

verbs, the ending expresses person and number. In some types of expressions, however, Czech – like English – uses the auxiliary verb to be; compared to English, this verb is more inflectional. For the conjugation of verbs, Czech has fourteen morphological paradigms which are characterised by different word endings. In Czech, there are imperfective verbs which express that an activity is unlimited in terms of time (i.e., to do something continuously) and verbs perfective that express an action is bound by time. The change from imperfective and perfective is performed using different types of derivatives. In Czech, we can classify verbs according to verbal aspect as well as multiplicity-iterativity, which is realised using derivatives. Aside from inflection, derivation is also widely applied in Czech. Many words are derived from others with the help of suffixation, prefixation and stem alterations (infixation). The most common Czech words that serve as a foundation for derivation are nouns and verbs. Derivation usually causes sound changes and leads to new forms of verbs and nouns. Derivation is also used to express the aspectual relations of verbs and iterative relations of verbs. Derivation can also lead to the formation of semantic variations. Derivation of most adjectives and adverbs leads to the formation of the 2nd and 3rd person singular and plural forms.

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Chapter 21

THE RELATIONSHIP BETWEEN VOCABULARY AND READING DEVELOPMENT

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ABSTRACT

Research has indicated that vocabulary depth and breadth are strongly correlated with reading comprehension and, consequently, with academic achievement. Recent research has demonstrated that vocabulary can even predict achievement up to 10 years later. Some theoretical models, such as the simple view of reading (Hoover & Gough, 1990) or the multicomponent view of reading (Cain, 2009) have received extensive empirical support and provided a clear insight into the relationship between reading comprehension and other linguistic variables, including vocabulary. In the context of these frameworks, studies have explored if vocabulary has a direct effect on reading comprehension or if the relationship between both variables is mediated by word reading and listening comprehension. The results generally seem to support a mediation effect; however, more studies are needed in different orthographies and grade levels. Additionally, results of other studies have indicated the existence of reciprocal relationships between the development of vocabulary and different reading abilities, as well as between the development of vocabulary and the comprehension of oral language. The implications of these findings for the design of interventions and for the planning of reading instruction are discussed.

Keywords: vocabulary, reading comprehension, listening comprehension, word reading

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1. INTRODUCTION

Children demonstrate some understanding of words and their meaning since early childhood. Typically, children produce their first words around their first birthday, but at this stage, they already show signs of comprehending several words; that is, their receptive vocabulary is much larger than their expressive vocabulary (Cadime, Silva, Santos, Ribeiro, & Viana, 2017; Jalongo & Sobolak, 2011; Kern, 2007). Around the children's second birthday, they are already capable of producing, on average, more than 300 words (Fenson et al., 2007). Furthermore, the children's vocabulary continues to grow in the subsequent years. Some studies on school-age children have indicated that they learn, on average, 2000 new words each year (for a review, see Nagy & Scott, 2000). However, the number of words produced is only one indicator of vocabulary. Vocabulary refers to the knowledge of words, the words' meanings, and the concepts associated with those meanings (Aarnoutse, van Leeuwe, Voeten, & Oud, 2001). In this sense, a distinction between vocabulary depth and breadth has been made in research (Cain, 2010). Vocabulary breadth refers to the number of lexical representations of the sound patterns of words within the lexicon (i.e., lexical entries), whereas vocabulary depth refers to the extent or quality of the semantic representations of word meanings (Ouellette, 2006; Swart et al., 2017). Lexical development is a continuous and incremental process, with phonological, orthographic, and semantic knowledge being continuously extended (Li, Farkas, & MacWhinney, 2004; Nagy & Scott, 2000).

Vocabulary seems to assume special importance for reading comprehension development, given that it is needed to process the meanings of words and phrases in the text. This chapter provides an overview of the complex interrelationships between vocabulary and different reading abilities, and discusses the mechanisms that underlie these relationships.

2. THE RELATIONSHIP BETWEEN VOCABULARY AND READING SKILLS

Several studies have indicated that children with reading disabilities show vocabulary deficits (Colenbrander, Kohnen, Smith-Lock, & Nickels, 2016; Nation & Snowling, 1998; Stothard & Hulme, 1992). Similarly, other studies have found that poor readers have lower expressive and productive vocabulary than do good readers, even after controlling for IQ differences (Kail & Leonard, 1986). Similarly, some studies assessing the effectiveness of interventions have suggested that promoting vocabulary leads to some improvement in reading comprehension (e.g., Bos & Anders, 1990).

The final goal of reading is to comprehend. Reading comprehension can be defined as the ability to construct meaning from written language (Snow & Sweet, 2003). A similar idea underlies the construction-integration model by Kintsch and colleagues (Kintsch, 1998; Kintsch & Rawson, 2005; Kintsch & Van Dijk, 1978). According to this model, the goal of comprehension is to construct a coherent mental representation of the situation described by the text, which is called the situation model of the text. The construction of the situation model requires the processing of two lower levels: (a) surface code, which refers to the linguistic unities (words and phrases) in the text, and (b) textbase representation, which refers to the construction of a representation of the elementary propositions expressed by the text,

i.e., includes the linguistic structure of the text and its meaning (Kintsch & Rawson, 2005). Thus, the situation model is a more abstract representation that includes not only the content of the textbase representation (which, in turn, is based on the surface code), but also the readers' previous knowledge (Cain, 2009; Graesser, Singer, & Trabasso, 1994). Vocabulary assumes an important role in the construction of textbase representation, given that the construction of the elementary propositions expressed by the text requires the lexical processing of words and sentences.

Not surprisingly, correlational studies have demonstrated that the students' vocabulary breadth and depth are associated with their reading comprehension levels (Aarnoutse et al., 2001; Droop & Verhoeven, 2003; Kim & Pallante, 2012; National Institute of Child Health and Human Development, 2000; Ouellette & Shaw, 2014; Ribeiro, Cadime, Freitas, & Viana, 2016; Ricketts, Nation, & Bishop, 2007; Santos et al., 2016; Swart et al., 2017; Torgesen, Wagner, Rashotte, Burgess, & Hecht, 1997; Verhoeven, 2000). However, the association seems to be stronger in more advanced grades, a result of which was obtained in not only deep orthographies (e.g., Ouellette & Beers, 2010), but also orthographies of intermediate depth (e.g., Fernandes, Querido, Verhaeghe, Marques, & Araújo, 2017; Seigneuric & Ehrlich, 2005). This finding was interpreted as the result of the progressive automatization of reading through experience, which allows other skills to become more important predictors of reading comprehension. In other words, word reading is one of the best predictors of reading comprehension in the initial years of reading acquisition, given that inaccurate or slow word reading severely affects the students' comprehension levels (Adlof, Catts, & Little, 2006; Francis, Fletcher, Catts, & Tomblin, 2005; Oakhill, Cain, & Bryant, 2003). Additionally, because word reading is not automatized in these initial years, it demands a heavy processing capacity, thus leaving less cognitive resources for higher order comprehension processes (National Institute of Child Health and Human Development, 2000; Perfetti, 1985; Stanovich, 2000). As reading becomes more automatic, linguistic skills such as vocabulary and listening comprehension become stronger predictors of the students' text comprehension (Catts, Hogan, & Adlof, 2005; Gough, Hoover, & Peterson, 1996; Tilstra, McMaster, Van den Broek, Kendeou, & Rapp, 2009). Thus, the relative importance of different linguistic skills on reading comprehension changes during the course of development.

The importance of vocabulary for reading comprehension development has also been demonstrated in longitudinal studies. The vocabulary level of children by the time they enter school is an important predictor of their level of reading comprehension skills in their subsequent years (Kim, Petscher, Schatschneider, & Foorman, 2010; Muter, Hulme, Snowling, & Stevenson, 2004; Verhoeven & van Leeuwe, 2008). Seigneuric and Ehrlich (2005) assessed longitudinally a group of French students from grades 1 to 3, by using measures of reading comprehension, vocabulary, working memory, and non-word reading. Their results indicated that the vocabulary level in grade 1 was the most important predictor of reading comprehension in grade 3. Similarly, in a study with Dutch children, Aarnoutse, Van Leeuwe, and Verhoeven (2005) found that children's vocabulary in the last year of kindergarten was one of the main predictors of reading comprehension in grade 2. However, the long-term predictive power of vocabulary seems to be even stronger than expected. Using data from a large-scale study conducted in the United States, Lee (2011) found that the expressive vocabulary of children aged two years old can predict their reading comprehension levels up to nine years later. Similarly, a recent study with Danish children indicated that the

vocabulary level at an age as early as 16 months old can predict reading comprehension ten years later (Bleses, Makransky, Dale, Højen, & Ari, 2016).

Given the importance of lexical processing for the construction of textbase representation, vocabulary has been associated with not only high order comprehension processes, but also low-level word reading and text reading fluency (Ouellette, 2006; Tobia & Marzocchi, 2014; Van Weerdenburg, Verhoeven, Bosman, & van Balkom, 2011; Verhoeven, van Leeuwe, & Vermeer, 2011). Studies have argued that the lexical representations that a reader possesses act like facilitators in word reading; thus, the higher the number of lexical entries and the higher the extent of the mental representations in memory, the more successful and faster the word identification process will be (Perfetti, 1998). Furthermore, other researchers have suggested that the mechanism underlying the relationship between vocabulary and word reading abilities is also related with the phonological coding of words; that is, the degree to which the sound patterns of words are specified in the lexicon influences the phonological awareness levels of the children, and consequently, influences their ability to map correspondences between graphemes and phonemes, and read words (Elbro, Borstrøm, & Petersen, 1998).

In conclusion, not only is vocabulary a fair indicator of children's reading abilities at any time but it is also a long-term predictor, and these findings have been observed in several different alphabetic orthographies. However, the debate persists on whether the relationships between vocabulary and reading are direct or indirect and whether these relationships are unidirectional or reciprocal.

2.1. Is Vocabulary a Direct or an Indirect Predictor of Reading Comprehension?

As mentioned before, research has consistently found an association between vocabulary (breadth and depth) and reading comprehension. However, the question of whether vocabulary contributes directly or indirectly to reading comprehension has received some attention.

According to a multicomponent view of reading comprehension (Cain, Oakhill, & Bryant, 2004), several skills contribute directly to the comprehension levels that the readers can achieve when they read a text. Vocabulary is among those skills. Results of studies that found a direct relationship between vocabulary and reading comprehension provide empirical support for this theoretical model (e.g., Seigneuric & Ehrlich, 2005).

The simple view of reading (SVR; Hoover & Gough, 1990) is another framework of reading comprehension and perhaps one of the most influential. According to this framework, reading comprehension is the product of two main skill components: word recognition and listening comprehension. The simple view of reading has received extensive support in studies conducted on readers of different orthographies, including deep and transparent orthographies (Adlof et al., 2006; Cadime, Rodrigues, et al., 2017; Florit & Cain, 2011; Joshi & Aaron, 2000; Joshi, Tao, Aaron, & Quiroz, 2012; Megherbi, Seigneuric, & Ehrlich, 2006; Tilstra et al., 2009; Tobia & Bonifacci, 2015). However, the SVR has also received some criticism because it fails to include, explicitly, several other skills related to reading comprehension, such as vocabulary (Braze et al., 2015; Braze, Tabor, Shankweiler, & Mencl, 2007). In fact, the concept of listening comprehension refers to oral language and linguistic

skills in its broad sense; therefore, listening comprehension could be understood as a dimension that encompasses oral vocabulary (Protopapas, Mouzaki, Sideridis, Kotsolakou, & Simos, 2013; Protopapas, Simos, Sideridis, & Mouzaki, 2012). Nonetheless, this assumption has not received much empirical support. For example, Ouellette and Beers (2010) administered measures of phonological awareness, decoding, irregular word recognition, listening comprehension, vocabulary, and reading comprehension to a sample of English-speaking Canadian students in grades 1 and 6. In the study, listening comprehension was measured by a task in which the students were required to read stories and answer questions about the stories. They found that, for the older students, vocabulary explained the unique variance in reading comprehension, even after controlling for the remaining variables (including listening comprehension). This finding suggests that oral vocabulary explains the variance in reading comprehension over and above listening comprehension and, therefore, should be analysed as a distinct construct.

Other scholars (e.g., Kim, 2015) have suggested that, in this framework, the relationship between linguistic skills, such as vocabulary, and reading comprehension is assumed to be mediated by listening comprehension and word reading. Mediation effects require that not only do the mediators (listening comprehension and word reading) predict the outcome variable (reading comprehension), but also that the predictor (in this case, vocabulary) is related with the mediators. In fact, several studies have provided evidence to support the existence of a relationship not only between children's vocabulary and word reading (e.g., Mitchell & Brady, 2013; Ouellette, 2006), but also between vocabulary and listening comprehension (e.g., Florit, Roch, Altoè, & Levorato, 2009; Kim & Phillips, 2014; Tompkins, Guo, & Justice, 2013; Viana et al., 2015). In this context, the relationship between vocabulary and listening comprehension, which is understood as the ability to construct meaning from oral language (Gilakjani & Ahmadi, 2011), is quite intuitive, given the importance of knowing words and their meanings to understand oral messages. In fact, vocabulary is a foundational skill that is used also for constructing the propositions needed for building the situation model at the discourse level, which is the goal of listening comprehension.

Given these findings, a small number of studies tested the hypothesis that the two components of the SVR (word reading and listening comprehension) mediated the relationship between vocabulary and reading comprehension processes. Vellutino, Tunmer, Jaccard, and Chen (2007) conducted a study with English-speaking children in grades 2-3 and grades 6-7, and found that listening comprehension and word reading completely mediated the relationship between semantic knowledge (i.e., vocabulary) and reading comprehension. Similar results were obtained in another study conducted in the United States with students from grades 1 to 3: In all three grades, vocabulary had an indirect effect on reading comprehension via both word decoding and listening comprehension (Cain, Catts, Hogan, & Lomax, 2015). A similar finding was also obtained by Kim (2015) in a sample of Korean-speaking kindergarten children (in Korea, kindergartners typically receive some reading instruction) in which listening comprehension and word reading completely mediated the relation of language and cognitive skills to reading comprehension. Kim (2015) also found that vocabulary was not only directly related to listening comprehension, but also indirectly via comprehension monitoring and the theory of mind skills.

Taken together, the findings of these studies supported empirically the mediation hypothesis in the SVR, thereby suggesting that the relationship between vocabulary and the

meaning construction from written language (i.e., reading comprehension) is mediated by oral language comprehension abilities and by low-level processes of word recognition. However, more studies on different orthographies and grade levels are needed.

2.2. Vocabulary and Reading Skills: Is the Relationship Reciprocal?

Another related issue is whether the relationship between vocabulary and reading is reciprocal. As mentioned before, vocabulary has been consistently found to be a significant predictor of reading skills and listening comprehension. However, given the fact that the sources of vocabulary acquisition can be varied and that vocabulary can be acquired through reading or through oral language (Gellert & Elbro, 2013; Nagy & Scott, 2000; Perfetti, Landi, & Oakhill, 2005; Verhoeven et al., 2011; Zhang et al., 2017), it is plausible to assume that reading skills and oral language comprehension are also predictors of the quantity and quality of the children's lexical representations. In fact, the results from longitudinal studies have indicated that the development of vocabulary and reading abilities is interrelated. This is exemplified in a longitudinal study that assessed Dutch children between grades 1 and 6: On the one hand, vocabulary predicted later word reading in grades 1 and 2, whereas, on the other hand, word reading predicted later vocabulary levels, although this second effect was only observed from the second grade onwards (Verhoeven et al., 2011). Verhoeven et al. (2011) suggested two possibilities to explain the finding that word reading had no effect on vocabulary at the beginning phase of reading instruction, but it had a significant effect in more advanced stages. The first possibility was that, at the early stages of reading instruction, the words used in the reading materials might have been very simple and common; therefore, those words are probably already part of the children's lexicons, and the reading activities do not contribute to increasing children's vocabulary (Verhoeven et al., 2011). The second hypothesis was that only in the later stages of reading acquisition, the automatization of word reading releases enough cognitive resources to allow the readers to process meanings and increase the quantity and quality of their lexical representations (Perfetti, 1998). Accurate and fast reading is particularly important when children encounter new words during text reading and need to determine their meaning using context. In fact, text reading fluency can also be a predictor of vocabulary in different age stages. For example, in a recent study with Portuguese students, Fernandes et al. (2017) found that text reading fluency predicted vocabulary in first and sixth graders.

However, the reciprocal relationships between vocabulary and reading are not limited to the low-level reading skills and have also been found for comprehension processes. For example, Verhoeven and van Leeuwe (2008) conducted a longitudinal study with Dutch children, who were assessed every year in grades 1 to 6. Using cross-lagged panel model analyses, they found that the relationships between vocabulary and reading comprehension were reciprocal across this time interval. Therefore, they concluded the following:

The more one reads, the more one can deduce word meanings from the surrounding text and, conversely, the more one comprehends, the more one's vocabulary may grow. In any case, reading comprehension can only be successful when word forms are readily identified and word meanings are easily accessed, which places considerable demands on the underlying linguistic capacities of the child (Verhoeven & van Leeuwe, 2008, p. 408).

A reciprocal relationship was also found between vocabulary and listening comprehension. This finding suggests that the more information a child hears (e.g., stories or conversations), the more words (and their meanings) the child can learn. In turn, the more words the child knows, the higher the comprehension levels that the child obtains from oral information. However, it must be noted that the vocabulary measures used in both studies involved not only vocabulary but also reading skills: In each item, the children read one sentence where a target word was underlined, and the task was to select an alternative for the target word from a list of four options. As a consequence, this feature of the measure could be partially responsible for the observed results.

CONCLUSION

To summarize, the research on the relationship between the development of vocabulary and reading abilities seems to support the so-called lexical quality hypothesis (Perfetti & Hart, 2001). According to the lexical quality hypothesis, comprehension is affected by not only the number of available lexical entries, but also the quality of the reader's lexical representations, including the semantic, syntactic, and morphological features of the words (Perfetti & Hart, 2001; Perfetti & Stafura, 2014). Although this framework has been used to explain the relationship between vocabulary and reading comprehension, research has indicated that it can also be used to explain the relationship between vocabulary and listening comprehension, given that both types of comprehension require the same processes of meaning integration (Kim, 2015; Kintsch & Van Dijk, 1978).

The results of recent studies, which suggested that the chain of influence of vocabulary on reading comprehension appears to be via listening comprehension and word reading, as well as the results that demonstrated the existence of reciprocal relationships between the development of vocabulary and reading skills, should not be ignored. If, on the one hand, familiarity with the words in a text can facilitate reading while, on the other hand, accurate and fast reading and skilled comprehension of a text can lead to vocabulary growth, then all these dimensions should be considered together when planning reading instruction in mainstream classes and when designing intervention programs for children with reading disabilities. Emphasis should be placed not only on oral language skills and vocabulary, or solely on the teaching of basic reading skills; instead, a broader approach that includes all components is necessary (Dickinson, Golinkoff, & Hirsh-Pasek, 2010; Torgesen, 2002). Reading instruction should promote deeper levels of processing, and intensive vocabulary instruction should be embedded in the reading activities. In this sense, teachers should plan instruction activities to expand the lexical repertoire of the children, by using diversified texts that include not only words that are familiar to students, but also words that are unknown to students. The exploration of these texts, which can be written or orally presented, should also include, when possible, activities that help students develop metacognitive strategies to deal with unknown words and unknown meanings when reading a text (Ribeiro et al., 2015). The diversity of activities is also important. The more encounters a child has with a word (in its oral and written forms), and the more varied the contexts where the child sees or hears the word, the more likely it is that the child will learn the word and process it deeply in semantic terms (Beck & McKeown, 1991).

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Chapter 22

INCIDENTAL VOCABULARY LEARNING THROUGH NEGOTIATION FOR MEANING IN SYNCHRONOUS COMPUTER-MEDIATED COMMUNICATION

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ABSTRACT

In the past few decades much research attention has been given to determining the effects of incidental vocabulary learning through negotiation for meaning on second or foreign language (L2/FL) vocabulary gains in a face-to-face (F2F) environment since vocabulary knowledge in L2 or FL is considered an important skill in order to have effective communication skills or good academic performance. In this line of inquiry, the nature of technology- or computer-mediated communication makes enhanced incidental learning feasible. This article aims to discuss relevant underlying theories and review previous empirical studies on language learning in both F2F and synchronous computer-mediated communication (SCMC).

Keywords: synchronous computer-mediated interaction, incidental vocabulary learning, second or foreign language learning

INTRODUCTION

Computer-mediated communication (CMC) is viewed as a useful tool to enhance second or foreign language learning (L2 or FL) since it promotes form-focused interaction (Hung & Higgins, 2015), allows learners to collaborate with each other to co-construct knowledge (Lee, 2002, as cited in Yilmaz & Granena, 2010), and most essentially provides learners with ample opportunity to interact with speakers of the target language or to practice the language

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without a limit to time and place. Moreover, CMC permits language practitioners or researchers to observe learners' language development in order to meet effective pedagogical agenda. In particular, synchronous text-based communication not only helps language learners to produce longer stretches of messages but also lowers their anxiety when encountering communication breakdowns.

Previous studies have emphasized that comprehensible input, the interaction hypothesis (Long, 1996), will be reinforced through clarifying words' meanings in the target language. The negotiated interaction has been deeply rooted in the Vygotsky's zone of proximal development (ZPD, 1978). ZPD emphasizes that for an individual acquiring knowledge the learner's interpsychological and intrapsychological efforts are required, thus implying that she initially interacts with her interlocutor(s) and then internalizes the learned components with her existing knowledge.

One research line has observed how learners working collaboratively in an F2F or SCMC environment employ interactional or communication strategies to solve linguistic difficulty; this suggests that the strategic processing affects form acquisition and that the benefit of using SCMC permits learners to look at the negotiated form on screen. Following this, the review paper will address the issues of L2/FL incidental learning, interactional strategy use, collaborative learning, and using SCMC/CMC tools for L2/FL learning.

INCIDENTAL VOCABULARY LEARNING IN L2/FL

Vocabulary knowledge has long been considered a building block of effective communication in L2 or FL. Without a sufficient vocabulary capacity, an individual will be expected to encounter difficulties in conveying his/her meaning or understanding what has been heard or read in the target language. In order to effectively communicate with others or comprehend texts, the learner may be expected to read or use the language substantially. Indeed, incidental learning underscores the importance of form-focused instruction (FFI), the overriding purpose of which is to facilitate form acquisition during planned or incidental instructional activities within a classroom (Ellis, 2001). The benefits of incidental vocabulary learning are to foster learners' reading strategy use, for example, establishing a conceptual framework to filter what is an irrelevant meaning of new vocabulary, inferring unknown words' meanings from contexts, and helping learners to elaborate on the new encounter while reading (Hulstijn, Hollander, & Greidanus, 1996).

Many of the previous studies examined the impact of incidental learning through reading or listening texts on linguistic gains, for example, Godfroid et al. (2017), and Hulstijn et al. (1996). In their study, Godfroid et al. (2017) investigated whether learners decreased processing time of new lexical items when they were frequently exposed to those items during L1 and L2 reading. Through an eye-tracking device, their results suggest that the participants who repeatedly encountered the target words in different contexts while reading tended to spend less time decoding the words.

However, other studies investigating incremental learning through negotiation between native speakers (NSs) and non-native speakers (NNSs) (e.g., Long, 1983; McDonough, 2005; Varonis & Gass, 1985), between teachers and students (Lyster, 1998), or between non-native speakers (e.g., Campillo, 2003), suggest that a negotiated form drawn from feedback provided

by learners' interlocutors may be inductive to the development of the language. Those studies have also given rise to the extent to which types of corrective feedback affect language gains; for example, repeating an error and providing a correct form was found to be more effective than explaining an incorrect form to acquire the target item (Campillo, 2003). NNS-NNS interaction was more likely than NS-NNS interaction to facilitate longer exchanges of utterances in a nonthreatening environment (Varonis & Gass, 1985). Instead of providing learners with correct forms or recasts, prompts that required the learners to repair their own errors tended to promote more accuracy in usage of tenses (Yang & Lyster, 2010).

In Newton's (2013) study, communication tasks, such as information gap and opinion gap, helped learners to engage in incidental vocabulary learning, by paying attention to their linguistic errors and attending to correct forms provided by their peers when they collaborated in solving lexical problems. In terms of the rate of learning new vocabulary, words that were negotiated were more likely learned than those that were not negotiated. Furthermore, he points out that a learner was required to have more encounters while learning new vocabulary through reading; however, a learner who negotiated new vocabulary was likely to learn with few encounters.

INTERACTIONAL OR COMMUNICATION STRATEGY USE IN L2/FL LEARNING

Strategy use enables learners to overcome language insufficiency as it is deemed to be essential to be acquired by the learners. Among many possible strategies, those employed by conversation interlocutors can be described as interactional or communication strategies (CSs) and the strategies can be applied in a synchronous (e.g., text/voice/video chat), face-to-face environment, or asynchronous setting (e.g., email exchanges). Theoretically speaking, CS from a socially interactional point of view is said to be the mutual attempt of two interlocutors to agree on a meaning in situations where requisite meaning structures are not shared (Tarone, 1983; Tarone, Cohen, & Dumas, 1983). Alternatively, a psychological viewpoint sees CS as a potentially conscious plan an individual employs to solve a problem in order to reduce or replace some element of meaning or form in an initial communicative goal (Færch & Kasper, 1983a). That is to say, there have been two primary features of CS use—conscious and problem-oriented. However, Cook (1993, p. 119) provides a definition that is more directly linked to L2 learners when he says “a communication strategy is resorted to when the L2 learner has difficulty with communicating rather than when things are going smoothly—a spare tyre of emergencies.” Thus far, we may say that CSs are conscious attempts to overcome communication gaps and allow a strategic user of L2 to handle problematic situations when confronted with linguistic incapability.

The strategic processes involve several cognitive steps in a traditional face-to-face situation whereby L2/FL learners employ compensatory strategies to cope with a variety of communicative events. They enable them to accomplish their desired communicative goals in spite of insufficient linguistic capabilities. In one instance, a new word triggers a collaborative dialogue in which dyads of participants attempt to solve the linguistic problem through verbal or non-verbal means and body language to express the meaning of the word (Dobao, 2012). By asking for help from an interlocutor or by using appropriate strategies,

they are able to compensate for their linguistic deficiency and achieve efficient communication during a conversation or while reading an L2 text. What this type of problem-solving and conscious strategy use implies is that compensatory strategies are often used to improve an L2 learner's strategic competence and to help them make gains in communicative competence (Chen, 1990; Haastrup & Phillipson, 1983).

COLLABORATIVE LEARNING IN SECOND LANGUAGE ACQUISITION

Learning any given knowledge or skills is viewed as a socially embedded activity in which students collaborate with others to solve problems in order to complete tasks given by their teachers. In language learning, collaborative learning is strongly emphasized; after all, individuals possess different language skills which allow them to learn from one another. Supported by the underpinning theory of socio-culture, the zone of proximal development (Vygotsky, 1978) in particular assumes that social collaboration rather than individual learning facilitates cognitive development whereby more competent students give feedback on the language use of the less competent students which will in turn help the latter reflect on what language works or not. As in previous studies investigating the interaction between native speakers of the target language and non-native speakers, and between different proficiency levels of learners, their results suggest that negotiation of meaning provides language learners with profound opportunities to acquire form because it allows the lower proficiency learners to pay attention to incorrect output or the higher proficiency learners/experts initiate repair moves through clarifying the meaning of new vocabulary, for example.

Like examples from some research studies comparing learning performances between individual and collaborative output in phrasal verbs (e.g., "break into"), Nassaji and Tian (2010) found that learners who worked collaboratively produced more accurate phrasal verbs than those who worked individually when performing tasks.

In Dobao's (2012) study examining negotiated instances between native speakers and learners and between learners and learners, although the former interaction permitted learners to have more effective linguistic input and more meaning-orientedness rather than form correction, the latter was found to have higher levels of engagement during task performance.

CMC/SCMC FOR L2/FL INCIDENTAL LEARNING

A broad range of CMC tools adopted by language learners communicating with others in the target language provides an emerging opportunity for incidental learning through negotiation. Among these, text-based interaction promotes form acquisition for it allows learners to process the written form of messages with extra time when compared to that of an F2F environment. Such a line of research often observes the occurrences of form negotiation between NS-NNS and/or NNS-NNS interactions, and the frequency of language related episodes (LREs) between different types of tasks, or frequency of modified interaction between F2F and SCMC environments.

Studies, such as that of Eslami and Kung (2016) investigating successfully resolved instances in both interactions between NS-NNS and NNS-NNS—though the former produced more LREs than did the latter—reveal that incidental focus-on-form occurred in both interactions in a synchronous text-based environment. Particularly, knowledge co-construction is more likely to occur in NNS-NNS than in NS-NNS; that is, the more capable peers in NNS-NNS interaction who acted as linguistic resources provided words to their less capable counterparts who were lacking vocabulary words to convey meaning in the target language. It is the case that language learners are often found struggling to use lexical/linguistic items appropriately or to elaborate on the items in a communication situation. In Darhower's (2008, p. 58) study, when a learner used an inadequate word "incapacity [guys]"/"special guys" to describe people who are physically handicapped, her interlocutor, a native speaker, initiated a series of repair moves to ensure that the intended meaning was conveyed by the learner, e.g., clarifying and confirming the negotiated item "handicap" or expression "people with disabilities" instead of the original form "incapacity." In so doing, the negotiated cycle enables the learner to produce the newly learned item in the subsequent turn and helps her to acquire the correct form.

AN EMPIRICAL STUDY ON TEXT-BASED NEGOTIATED INTERACTION OF NNS-NNS AND NNS-NS ON FACEBOOK (LIU, 2017)

In order to address incidental vocabulary learning through negotiation, the empirical study conducted by the author of this article examined negotiation instances and interactional strategies during text chat on Facebook despite the research not dealing directly with vocabulary learning. In response to the inquiry of the incidental vocabulary learning, some of excerpts taken from that research will be reanalyzed here. The methodology and findings of the research discussed in the following paragraphs will provide a better understanding of how incidental form-focused interaction takes place in an SCMC environment.

METHODS

Participants

This research involved EFL learners and native speakers of English to form two types of interaction, NNS-NNS and NNS-NS. In the former, there were 5 pairs of higher and higher proficiency learners (H-H), and 5 pairs of lower and lower proficiency learners (L-L), whereas the latter consisted of 5 pairs of higher proficiency learners and NSs (L-N) and 5 pairs of lower proficiency learners and NSs (L-N), for a total of 40 participants (M = 10, F = 30). The lower proficiency learners were recruited from various disciplines (e.g., law, tourism, and business) in the university where the researcher taught, while the more capable ones came from the Applied English Department in the same university; native speakers came mainly from United States, United Kingdom, and New Zealand and resided in Taiwan while learning Chinese or teaching English when the research was conducted.

Tasks and Instruments

Two sets of postreading questions were based on students' textbooks. In the higher proficiency group, the reading passages with two topics of travelling and advertisements, were drawn from Mol (2008); there were four questions for each topic, such as "What does the short article talk about?" and "Where is the text likely to be seen?" In contrast, in the lower proficiency group, the texts regarding the topics of personality and online shopping were from Wilson (2011).

Facebook Text Chat

Facebook is acknowledged as one of the educational networking sites and one of the most popular social websites with a number of tools, such as online games and video/text chat, that enables users to manage privacy settings (to choose who can or cannot view their profiles) (Hew, 2011), encourages learners to interact with native speakers of the language (Kabilan, Ahmad, & Abidin, 2010) and engages students in professional topics (e.g., medical and clinical practices). Of the many Facebook tools available for pedagogical purposes, text chat, in terms of language learning, may develop learners' metalinguistic knowledge which may potentially lead to interlanguage (O'Rourke, 2005), by noticing the differences between the form used by themselves and by others during the negotiation of meaning and thereby may potentially activate strategic tactics to cope with insufficient knowledge. It may be reasonably assumed that compared to the asynchronous text chat, synchronous text chat may result in more modified exchanges between the participants when communication breakdowns arise during the course of task performances.

The research employed text chat to collect data that permitted the researcher to compare the results among the dyads. Each dyad was set up in a chatroom on Facebook. The participants worked with their partners and at the same time they were also informed to use text chat. In order to collect chat logs, each chatroom was created by the researcher who invited dyadic participants to join; despite the researcher being present in each chatroom, she by no means interacted with any participant during task performances.

Language-Related Episodes (LREs) and Data Analysis

A language-related episode (LRE) refers to any segment of language use by a learner producing incorrect linguistic items or solving language-related problems during face-to-face interaction (Swain & Lapkin, 1995). LREs are coded in chat scripts and counted in terms of frequency and turns. Turns concerning interactional strategy use for resolving linguistic problems encountered by an interlocutor were analyzed in the study. A turn refers to "each time there was a transfer of the 'floor' from one participant to the other" (Smith, 2003). However, a turn produced in an SCMC environment contains one or a few lines of messages conveyed by an interlocutor. Frequencies of the strategy use were tallied. The adopted modified interaction model in Figure 1 provided by Varonis and Gass (1985) illustrates two parts of nonunderstandings, trigger (T) and resolution; the former (T) is a word or sentence in the preceding turn of a speaker which is not understood by the hearer, while the latter consists

of an indicator (I), a response (R), and a reaction to response (RR). An excerpt below is to demonstrate how this model is applied in a communicative event when nonunderstanding arose in the text chat environment.

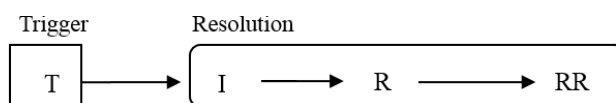


Figure 1. Model of non-understandings.

In excerpt 1, Jane, as a native speaker, and Ping, a learner, initiated a modified interaction when the learner did not know what the word “palm” meant during an information gap activity. Apparently, the word “palm”, as used by Jane, triggered the instance in turn 5; then, Ping explicitly initiated a request for clarification though he spelt it wrong as “paim” in turn 6. During the next turn, Jan responded to the request by explaining what it looked like; note that she immediately provided a correct form (grow) once she found she had mistyped a word (“grw”). Finally, the learner’s reaction to the response (the explanation of the word) implicitly acknowledged that she understood the word’s meaning since she directly responded to Jane’s question in Jane5 which related to task rather than to the explanation of the word.

[Excerpt 1—An exchange between NS and LA]

Jane5 Same, do you have two palm trees as well?

Ping6 What is paim [palm] tree

coconut

?

Jane7 Yes, they are the trees that coconuts grw on.

*grow

Ping8 I have three.

RR

It is worth mentioning that the patterns in excerpt 1 can be identified as collaborators and expert-novice dyads; the former characteristics are that dyad participants are engaged with each other’s ideas (Watanabe & Swain, 2007), both interactants contribute equal turns to text chat communication, and help his/her partner to elaborate on thoughts or to extend turns, whereas in the latter an expert scaffolds his/her less capable learner to learn new vocabulary or provides help to the learner (Watanabe & Swain, 2007). Note that the detailed analyses of the dyad patterns are presented in Liu (2017).

In Appendix A, five types of interactional strategy use included comprehension and confirmation checks, clarification requests, continuers, and asking for assistance. For instance, a comprehension check refers to a situation in which an interlocutor considers a word or phrase that might trouble his/her partner’s understanding and ensure whether s/he understands it. In Appendix A, an example illustrates that Joyce asked her partner whether he knew the word “stubborn.” A clarification request often means that a learner’s turn with an error triggers a repair move to clarify the meaning of the form because a nonunderstanding has arisen during a conversation. Clarification requests are often in interrogative utterances such as “What do you mean?” and “Can you please elaborate on this?” A continuer strategy indicates that one interlocutor signals the other to continue what has to be done.

Procedure

Liu's (2017) research was conducted in a synchronous text-based environment by observing how the dyadic pairs interacted in real time by typing messages to complete given tasks. Prior to the study, the researcher briefly described her research plan to her potential students in her classes such as advanced listening and speaking in English and general English courses. She then distributed the call-for-participants (CFP) flyers to the students, which stated what they were expected to do, e.g., how much they were paid and how long the research would last. More importantly, issues concerning research ethics, such as protecting their privacy, were addressed in the flyers. Similarly, the researcher approached native English speakers who were informed about the ethical issues as stated in the CFP flyers.

Each task taking place in Facebook chat rooms was completed by the dyads each week; all the participants were told that they would have to complete a task within one hour, that each pair could arrange their chat at their convenience, and that they should work together at the same time. For lower proficiency learners, they were not allowed to use a dictionary for new words as this would encourage them to employ interactional strategies.

RESULTS

The results first suggest that all dyads tended not to correct linguistic errors since 104 errors (out of 426) were found corrected while 322 errors were left uncorrected. Specifically, interaction between H-H dyads yielded more repair moves than the other three types of dyads. Due to capability in the target language, H-H dyads had more successfully resolved instances than L-L dyads. Moreover, the H-H dyads employed more interactional strategies than the other three types of dyads. According to the assumption of Liu (2017), compared to other dyads, H-H dyads were more likely to focus on form and meaning which resulted in more negotiation instances. Equally important is that the text chat allowed the H-H dyads to have more opportunity to look back at the contents of text chat.

To emphasize the incidental form-focus interaction, two excerpts taken from Liu (2017) will be reanalyzed. The following exchange between two high proficiency learners, Ken and John discussed one of postreading questions. A lexical item "challengeable", coined by Ken, triggered the modified interaction; despite the fact that the coined word did not hamper John's understanding, he provided the correct form "challenging" to Ken by using a confirmation check. In this case, there is an important bearing: although the two learners had encountered less communication difficulty in expressing their ideas, to some extent they still had some kind of linguistic gaps. In Ken's case, Ken might assume that most adjective items contained the suffix "able" rather than a gerund form "a verb + ing". John corrected the form and politely made a comment about the error (in John31 turn). Ken in turn responded to John's feedback by retyping the correct form (in Ken30 turn), illustrating that the feedback move drew Ken's attention to the correctness, and he in turn used the correct form in the next turn, thus making the negotiated item learnable.

Ken28: Well, living alone is quite challengeable.

John29: Do you mean challenging?

- Ken30: Sorry for my mistake—challenging not challengeable.
 John31: Haha, challengeable is not a word.
 Ken32: ☺

As noticed, the following exchange is mostly meaning-focused since Sam (a native speaker) neither corrected Jane's lexical errors (e.g., "save") and misspellings (e.g., "grounp"), nor pointed out those errors. Instead, he (in Sam19 turn) helped her to produce output by clarifying the unclear message in Jane18 turn which did not respond to his question in the previous turn. In Jane18 turn, there were numerous grammatical/lexical errors and semantic inappropriateness. Instead of explicitly correcting errors, Sam expressed his opinion about his preference (in Sam22) with a feedback move "... I need to consider..." on Jane's erroneous output "... I don't need considered..."

- Sam15: Do you think they have more freedom?
 Jane16: Yes, I think they are.
 Sam17: In your opinion, do you prefer travelling as a backpacker or with a tour group? Why?
 Jane18: It just not save for a alone girl travel as a backpacker. If I can gather some partner together, I would like as a backpacker.
 Sam19: Why?
 Sam20: What do you think are the advantages over a tour group?
 Jane21: The advantages over tour group, those are: I don't need considered the accommodation, like food, hotel, transportation....
 Sam22: I always prefer to travel without a tour group because then I can stay longer at a place I like. If I'm with a group I need to consider the other people.
 Jane23: But, I want to be "flashpacking".

CONCLUSION

This review article has mainly focused on the effect of incidental learning on vocabulary gains through negotiation in SCMC since to obtain vocabulary knowledge requires learners to use the newly acquired vocabulary in different contexts. Through negotiation for meaning, learners are able to pay attention to incorrect lexical items or inappropriate word usages that trigger communication difficulty in the language. Hence, there are several pedagogical implications. First, learners are encouraged to learn new vocabulary through interacting with others; by doing this, they will be able to notice their errors and to attend to the correct forms. Second, CMC technologies provide learners with ample opportunity to learn vocabulary incidentally. Using CMC allows learners to communicate with others from the target cultures or without time and space constraints. There are many benefits to using CMC technologies, especially for text chat; for example, when learners do not understand lexical items, they are allowed to scroll up and down on the screen and this may help them reduce anxiety or nervousness. Also, compared to an FTF environment, correct and incorrect forms that appear on the screen may become more noticeable. Finally, it may be useful to instruct language learners to acquire interactional strategies within the classroom in order to help them to use

the learned strategies in different situations and, more importantly, to facilitate more effective incidental learning.

APPENDIX A - INTERACTIONAL STRATEGY USE

Strategies	Excerpts (strategy use is underlined in excerpts)
Comprehension checks (Long, 1983; Bower & Kawaguchi, 2011)	1. Joyce13: two sisters have different personalities, <i>do you know stubborn?</i> Liam14: yes Note: a comprehension check is used to check whether a conversational interlocutor understands what has been said. Excerpt 1 taken from an L-L dyad indicates that Joyce checked on Liam's understanding of the word "stubborn".)
Confirmation checks (Long, 1983; Foster & Ohta, 2005)	2. Mary20: and is broken about using 3 months Kate21: <i>are you sure it has been used for 3 months?</i> Note: a confirmation check refers to an expression given by an NS to ascertain whether a preceding utterance has been understood or heard by his/her interlocutor during conversation. Excerpt 2 demonstrates that Mary as a learner misinterpreted the reading text, so Kate as an NS raised the question to confirm whether her understanding of that part of the text was correct.
Clarification requests (Lyster, 1998; Bower & Kawaguchi, 2011)	3. Lin32: ship is send? Jack33: <i>Sorry I don't understand. What do you mean "ship is send?"</i> Note: a clarification request as corrective feedback refers to the utterances produced by learners which contain errors and so need to be corrected (Egi, 2010; Jepson, 2005). Excerpt 3 shows that the native speaker Jack did not understand what the learner Lin had said as the learner attempted to ask whether "ship" here meant "send".
Continuers (Foster & Ohta, 2005)	4. Emily19: <i>Number two</i>, I think she spend too much money at shopping online Lisa20: I know. Note: a continuer is defined as "an utterance that shows that the talk is unproblematic prompting the speaker to go on." In this current study continuers were used when an individual wanted to continue reading another question from a text. In Excerpt 4, when the learners Emily and Lisa, an H-H dyad, had completed the first reading comprehension question, Emily invited Lisa to work on the second comprehension question.
Asking for assistance	5. June16: I don't know how to answer the question, <i>can u help me</i> Lily17: sure, what difficulties are you having? Note: a short exchange between June and Lily, one of H-N dyads, demonstrates the strategy deployment in Excerpt 5 where the learner asked help from her expert interlocutor (June 16) in order to complete the task.

Source reproduced from Liu (2017).

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VOLUME 3

Chapter 23

EFFECTIVENESS OF VOICE THERAPY IN VOCAL FOLD NODULES

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ABSTRACT

Vocal fold nodules are a functional voice disorder associated with voice misuse and abuse. They are benign masses, typically located on the membranous aspect of the vocal fold. Voice therapy is a process that aims to bring voice to a level of fitness that can supply occupational, emotional and social needs, knowing that not all patients will achieve a normal voice. Voice training usually consists of a combination of “direct” and “indirect” treatment techniques. Direct techniques focus on the underlying physiological changes needed to improve an individual’s technique in using the vocal system. These techniques are aimed to modify and/or improve vocal fold closure (adduction), respiratory patterns, resonance, pitch and articulatory tension. In contrast, indirect procedures concentrate on contributory and maintenance aspects of the voice disorder and may involve relaxation strategies, counselling and explanation of the normal anatomy and physiology of the vocal tract, explanation of the casual factors of voice disorders and voice care and conservation.

Keywords: vocal folds, vocal cords, vocal nodules, voice, rehabilitation, therapy

INTRODUCTION

Vocal fold nodules are a functional voice disorder associated with voice misuse and abuse. They are benign masses, typically located on the membranous aspect of the vocal folds. Common symptoms include hoarseness, breathiness, vocal fatigue, straining, rough voice and vocal range decline. [1, 2]

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Vocal nodules are a frequently occurring type of voice disorder. Their incidence appears to be related with occupation. [3]

Voice therapy can be conceptualized as a process aiming to bring voice to a level of fitness which can be considered achievable by the patient. This level of improvement should be enough to supply the patient's emotional, social and occupational needs. It should be pointed out that not all patients can achieve an entirely normal voice. [4]

Voice therapy usually starts from awareness of the voice disorder. However, when children exhibit voice disorders, it is quite difficult for them to be aware of their voice abnormal voice quality or their vocal symptoms. [5, 6] Thus, in these cases working with the family becomes essential.

Several authors have reported that vocal treatment of dysphonia, whether organic or functional, can address several aspects which may be applicable to most cases. These include relaxation exercises, breathing exercises and voice projection and impost. [4]

Holmberg, et al. [3] reports that clinicians use a variety of therapy approaches to treat vocal nodules. A main goal of the treatment techniques is to reduce muscle tension and hyperfunction and optimize vocal behavior to reduce the trauma to the vocal folds, so that aerodynamic forces and acoustic properties approach normal values. The realm of the therapy can be divided into four basic approaches: 1. vocal hygiene; 2. direct facilitation; 3. Relaxation; and 4. respiration. In addition, it is generally agreed that some time should be devoted to "carryover" newly learned vocal behaviors to "real life" situations outside the therapy setting. Perceptual judgments have long been the major clinical tool for voice evaluation. The clients seek treatment in part because their voice does not sound normal. Speech clinicians use both formal and informal perceptual judgments in each session with the client, and perceptual judgments always serve as a complement to visual inspection of the larynx and vocal folds. In addition, perceptual parameters are used as standards against which objective measures of voice are evaluated. It has been a problem that large intra - listener and inter - listener variations have been found in perceptual evaluations, which therefore have been criticized as being too subjective to have real clinical value. In contrast, good agreements among listeners have been shown in other studies. Much of the recent research reports have focused on objective measurements of vocal function. Unfortunately, the techniques for obtaining such signals are not always easily accessible in clinical centers. Moreover, analyses and interpretations of the results are not straightforward. Identifying voice quality parameters that reflect underlying vocal function should have strong clinical value.

An important goal is to develop reliable methods for perceptual evaluations of voice quality, and to establish reliable relationships between perceptual judgments and objective measures of underlying physiological conditions.

Endoscopic findings have demonstrated vocal hyperfunction in patients with vocal nodules undergoing behaviorally based voice therapy. [3] Based on these findings, it has been possible to define relationships between therapy approaches and desired modifications in vocal function which can be assessed and detected by selected voice quality parameters, hence contributing to the development of perceptual criteria for evaluating treatment outcomes in cases of vocal nodules. At the onset of voice intervention, no differences have been found between evaluations of patients' recordings that have been repeatedly examined for reliability. However, after the intervention period, it has been demonstrated that nodules decreased in size either bilaterally or unilaterally. Also, it has been reported that the

surrounding edema that can be found at the onset of voice intervention either unilaterally or bilaterally is significantly decreased after intervention.

In a previous report [3] mean values were always high ($\alpha > 0.80$) for the parameters: press, breathiness, lack of sonority, scrape, and dysphonia, while mean α for other parameters varied across assessments. Strong ($r > 0.70$) positive correlations were found in several assessments between press and gratings; roughness and scrape; and between breathiness and aphonic instances, including lack of sonority and instability. Vocal fry was not strongly correlated with any of the other parameters, but a few cases of significant negative correlations were found between vocal fry and breathiness and aphonic instances. Overall dysphonia before and after therapy was strongly correlated with press, breathiness, and scrape. No cases of significant correlations were found between press and breathiness. Endoscopic ratings of vocal status showed that none of the vocal nodules had completely disappeared after completion of the therapy. This finding is in agreement with histologic studies that suggest that more permanent types of tissue damage may be associated with the formation of nodules, e.g., fibroblastic response involving increased fibronectin decomposition. Thus, the positive impact of therapy is not necessarily associated with a complete amelioration of the nodular lesions. However, the fact that the nodules had decreased in size after therapy for most patients, as well as findings of reduce edema, strongly suggest that voice therapy has a trauma-reducing effect for the majority of patients. Hyperfunctional vocal behavior appears to have decreased. Thus, there seemed to be a good potential that the compensatory “vicious circle” of further increased muscle tension and increased subglottal pressure leading to escalating trauma could be stopped by voice therapy. The combined results from endoscopic and perceptual evaluations suggest that alterations in vocal status and voice function were reflected in parameters of voice quality. These results of decreased nodules and improved voice quality suggest that the voice therapy had a positive effect for a majority of the patients with vocal nodules.

A Cochrane’s systematic review [7] reports that that voice training usually consists of a combination of “direct” and “indirect” treatment techniques. Direct techniques focus on the underlying physiological changes needed to improve an individual’s technique for using the vocal system. These techniques are aimed to modify several functions or behaviors including: vocal fold closure (adduction); respiratory patterns; resonance; pitch; and articulatory tension. In practice this means to guide intensive training concerning modifications of correct posture, breathing techniques and the production of various sounds like humming, singing musical scales or yawing. Indirect techniques, on the other hand, concentrate on contributory and maintenance aspects of the voice disorder and may involve relaxation strategies; counseling; explanation of the normal anatomy and physiology of the vocal tract; explanation of the casual factors of voice disorders; and voice care and conservation. The systematic review did not found sufficient evidence to support statements that either direct or indirect or even both combined are actually effective for improving vocal functioning when measured using self-reported outcomes and when compared to no intervention. [7]

Some reports have evaluated the effectiveness of training using direct intervention techniques alone compared to no intervention. In general, direct techniques focus on the underlying physiological changes needed to improve an individual’s technique in using the vocal system. These techniques include training focused on posture, respiration, release of tension in the vocal tract, resonance and voice projection. [7]

Voice training can consist of vocal warm-up and cool-down as well as group activities regarding the psychodynamics of voice production. In order to promote vocal warm-up, facilitating sounds, body movement techniques with sounds production, overarticulation exercises, semi-occluded vocal tract exercises and chant talk exercises have been used. Direct voice training can also include warm-up, stretching, contracting, forced adduction and strengthening exercises to be practiced at home, twice per day, preferably morning and evening for a six-week period. [7].

Indirect voice training alone has been compared to no intervention. Indirect techniques concentrate on the contributory and maintenance aspects of the voice disorders (such as lack of knowledge). Indirect training can consist of providing information on the mechanics of voice production, the amount and type of voice use, vocal behaviors thought to be traumatic for the vocal cords, hydration issues, and lifestyle and diet factors that can support or interfere with a healthy voice. Patients are informed of the prevalence and impact of voice problems in teachers; basic anatomy and physiology of voice production; symptoms of voice disorders; strategies to reduce harmful vocal behaviors; managing and minimizing health factors for the development and maintenance of voice problems; and changes in the speaking environment than increase vocal efficiency and reduce vocal injuries. [7]

Lectures can be offered concerning the main factors causing vocal loading in teachers, methods available include: avoid overloading and basics of economic versus non-economic voice use. The voice training is geared towards gaining ease and endurance in voice production as well as getting rid of any poor vocal habits. The learning methods are usually introspections, discussions, voice exercises and individualized homework aimed to finding economic voice production, i.e., avoidance of excessive muscle tension of the larynx; deep breathing technique; firmness of phonation without effort; well-resonating voice quality to improve audibility; and adequate individual pitch and loudness range and variation. Patients can also receive voice hygiene lectures and in addition undergo voice massage TM in several sessions. Voice Massage TM consists of manipulation of voice and speech production muscles of the larynx, respiration and articulation. It also includes some vocal and respiratory exercises during manipulation. [7].

Some studies focus on direct and indirect voice training combined. Interventions consist of lectures and a practical session. The lectures concern anatomy and physiology of phonation, causes and predisposing factors to abnormal vocal fold pathology, warning symptoms of vocal fatigue, voice ergonomics (i.e., vocal hygiene, strategies to reduce vocal demand in the classroom, and changing behaviors in daily life to reduce vocal abuse), classroom acoustics, and amplification systems. Practical sessions consist of group voice therapy training: efficient respiratory behavior; laryngeal muscle relaxation; manual circumlaryngeal therapy; relaxed voicing with elimination of hard glottal attack, chewing, voicing, yawn-sigh, chant talk and pitch inflections; proper oral-nasal resonance; and developing greater oral opening [7].

Another study evaluated the effectiveness of two different programs of voice treatments on a heterogeneous group of dysphonic speakers and the stability of therapeutic progress during long term follow-up post - intervention period by using a limited multidimensional protocol of evaluation. Pathologies included vocal nodules, polyps, angiomatous polyps, Reinke's edema and hypotonic dysphonia. Patients were assigned to one of two groups, the participants in the first group received voice-therapy consisting of five phases of basic information and counseling, relaxation, breathing, emission and placement, and carryover.

The total number of sessions per participant was 24 which were conducted over a period of 12 weeks. Each session lasted approximately 45 minutes. In contrast, participants included in the second group received a voice hygiene program. These patients followed guidelines for a program previously described as successful when it was used for teachers. An initial informative session lasting approximately 60 minutes was provided. The results of this study suggest that voice-therapy (direct approach) seems to be more effective than the vocal-hygiene program (indirect approach). The significantly better improvement was detected in most of the hard - dimensional variables which were used for assessing outcome, including: Aerodynamic measurements, acoustic parameters and self – rating.

Qualitative – perceptual variables including: laryngoscopy findings and spectrographic analysis also showed better outcome in patients undergoing the direct approach. The stability of these changes is usually extended during long term post - intervention follow-up period. [8]

According to another systematic revision, direct voice therapies seem to be more effective than indirect voice therapies. [9]

In studies of some specific voice therapies methods, such as manual laryngeal tension reduction and the Accent method, positive post - therapy outcomes are more frequently reported than in other studies in which therapy methodology is not clearly defined. [10]

Voice therapy approaches are often divided into three main categories: hygienic (improving behaviors than can lead to injury of the vocal folds), symptomatic (targeting treatment of abnormal voice quality in the resulting phonated voice), and physiological (optimizing voice production). These techniques have proven to be effective both in adults and in children. However, it should be pointed out that in children, the compliance of the family for modifying family's style of voice use is essential for a successful outcome. [10, 11]

CONCLUSION

Vocal nodules are the pathological result of vocal abuse and misuse. This pathology has been found predominantly in voice professionals and patients with an inadequate vocal hygiene including children. The resulting dysphonia brings consequences in psychological, socio-economic, family, and labor aspects. The best approach for tackling this disorder seems to be a multidisciplinary methodology, covering both medical and therapeutic aspects, using several therapeutic techniques including indirect and direct approaches.

An early diagnosis and treatment can prevent surgical treatment as well as consequences involving professional and personal aspects of the patient's life style.

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Chapter 24

SPEECH AND LANGUAGE PATHOLOGY INTERVENTIONS IN CRITICAL CARE: A RETROSPECTIVE VIEW

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ABSTRACT

Speech and Language Pathology interventions in critical care purport to improve patient care and patient outcomes by addressing the risk for aspiration due to iatrogenic dysphagia related to tracheostomy tube placement, ventilator dependency and critical illness myopathy. Many Speech Pathology recommendations address NPO status, need for alternative feeding via Corpak tube and need for PEG tube placement. A retrospective analysis of 20 patients admitted to the various medical neurosurgical and surgical ICU's analyzed patients from two groups: those who were kept NPO until a Speech and Language Pathologist assessed swallow function and those who had an oral diet assigned by the medical team without an initial formal Speech Pathology swallow assessment. Among the parameters investigated were LOS in the ICU, need for re-intubation, number of NPO status days, recommendation for Corpak tube or PEG tube and discharge status with respect to oral feeding, tube feeding and modified diet.

Keywords: swallowing, dysphagia, tracheostomy, gastrostomy, speech and language pathology

INTRODUCTION

Speech and language Pathology interventions in critical care purport to improve patient care and overall patient outcomes by addressing the risk for aspiration due to iatrogenic dysphagia from tracheostomy tube placement, vent dependency and critical illness myopathy.

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[1] Many Speech Pathologists directly recommend NPO status, post suggestions for placement of a Corpak tube due to NPO status and suggest PEG tube placement. [2] Specific recommendations for oral feeding with modified diets are part of the Speech Pathology plan of care. At the conclusion of their evaluations Speech Pathologists generally decide that patients have benefitted from these recommendations. However, the medical team may conclude that patients seen by Speech Pathology receive higher numbers of recommendations for tube feedings, have longer patient stays and that the recommendations by Speech Pathology further complicate the medical course; the placement of feeding tubes can cause more complications, result in dislodged tubes and extra procedures for replacing them, complicate the discharge plan and therefore increase length of stay. [3]

PURPOSE

The purpose of this study was to compare the clinical outcome for ICU patients who were kept NPO until a swallow assessment was completed by Speech Pathology with patients who were initially given oral diets by the medical team in the absence of a formal Speech Pathology assessment.

MATERIALS AND METHODS

A retrospective analysis of 20 patients placed in the ICU between January 1, 2014 and February 28, 2014 was completed. The data collected addressed the patients' overall length of stay, the total number of procedures completed by Speech Pathology; the number of NPO days recommended by Speech Pathology; the number of instances in which feeding tubes were recommended by Speech Pathology; the number of patients requiring re-intubation for respiratory distress, and the discharge plan specific to oral feeding recommendations.

Patients were divided into two groups. In Group 1, 10 of the patients reviewed had been NPO until seen by a Speech Pathologist. Of this first group, the medical team had determined that the patient would be best served by remaining NPO until a formal clinical swallowing assessment could be completed. This assessment took place bedside with the actual number and type of food items presented left to the discretion of the evaluating clinician. The recommendation for an instrumental evaluation, specifically Modified Barium Swallow Study, was made by the Speech Pathologist who completed that initial clinical swallow assessment and not by another member of the medical team.

In Group 2, 10 of the patients reviewed were placed on oral feeding by the medical team and were not initially seen for a standard clinical assessment by Speech and Language Pathology. Either the rounding physician or the bedside nurse determined that the patient had a functional swallow for oral feeding. This last group of patients was eventually assessed by Speech Pathology, either for later issues potentially related to dysphagia, or for interventions related to parameters outside of swallow function, specifically dysphonia or language and cognitive dysfunction.

The patients selected retrospectively were randomly chosen from those placed in the various surgical, neurosurgical, cardiac and medical ICU's during the two month period noted

above. Patient diagnoses were highly variable and included multiple trauma with traumatic brain injury, subarachnoid hemorrhage, complications associated with cardiovascular surgery, hemorrhagic CVA, craniotomy for brain tumor excision, and post-surgical respiratory failure. All of the patients had been intubated, some of them had tracheostomy tubes at the time of evaluation; other patients were tracheostomy tube free.

RESULTS

Results of Patients with NPO Status Until Seen by Speech and Language Pathology

The Average Number of ICU Days:	9.5.
The Average Number of Visits by Speech Pathology:	3.3
The Number of Patients Receiving Modified Barium Swallow Study:	3
Average Number of NPO Days After Seen By Speech Pathology:	2
Number of PEG Tube Recommendations:	0
Number of Corpak Tube Recommendations:	1
Number of Modified Diets Recommended:	7
Number of Patients Discharged on Soft or Regular Diet with Thin Liquid:	7
Number of Patients Discharged from the Hospital on Thickened Liquids:	2.
Number of Patients Discharged to a Long Term Care Facility with Corpak Tube in Place:	1
Number of Re-Intubations Specific to Presumed Oropharyngeal Aspiration:	0

Results of Patients Starting Oral Feeding before Evaluation by Speech and Language Pathology

The Average Number of ICU Days:	11.1
The Average Number of Visits by Speech Pathology:	4
The Number of Patients Receiving Modified Barium Swallow Study:	4
Average Number of NPO days after being seen by Speech Pathology:	4
Number of PEG Tube Placement Recommendations by Speech Pathology:	0
Number of Corpak Tube Recommendations:	3
Number of Modified Diets Recommended:	9
Number of Patients Discharged on Soft or Regular Diet with Thin Liquid:	6
Number of Patients Discharged to ECF with PEG Tube in Place:	1
Number of Patients Discharged to ECF with Corpak tube in Place:	0
Number of Re-intubations Specific to Presumed Oropharyngeal Aspiration:	2

DISCUSSION

The ten patients In Group 1, who were NPO until seen by Speech Pathology for a formal clinical swallow assessment, had no instances of oropharyngeal aspiration. Two out of the second group of 10 patients developed increased respiratory distress and required re-intubation. While it is difficult to draw a direct correlation between increased respiratory distress and oropharyngeal aspiration, the medical team deemed aspiration a consideration to be resolved by a Speech Pathology evaluation. [4] On completion of a Modified Barium Swallow, both of these patients were found to have aspiration of at least one food and one liquid consistency. Unresolved questions include the possibility that the overall medical course was more complicated and that dysphagia was therefore a later consequence of those complications. It is certainly possible that the need for repeated intubation and prolonged NPO status as a result of intubation contributed to the MBS findings and that prior to re-intubation swallow function had been better. Also under consideration is the possibility that those two patients had less stable respiratory status than the others and developed increased risk for aspiration simply due to the added labor of trying to coordinate respiration with swallow initiation. [5] However, with any of those considerations in mind, a formal clinical swallow evaluation might have concluded that those two patients would be best served by short term NPO status while respiratory function stabilized.

With the exception of one patient who was seen for a language assessment post hemorrhagic stroke all of the patients in Group 2 developed some complication related to respiratory function that increased the medical team's concern for underlying dysphagia and associated aspiration as a potential factor in the change in respiratory status. Of the 10 patients in Group 2 who eventually received a consultation for Speech Pathology all but one of them were found to have dysphagia requiring at least a modified diet. Were the modified diets warranted? Should the patients have had Modified Barium Swallow Studies? Were those studies simply added cost? Was respiratory distress going to occur whether or not Speech Pathology was involved? Were the changes in respiration really associated with swallow dysfunction or were those events specific to other medical issues? While it is not within the scope of this simple retrospective analysis to determine whether the presence of Speech Pathology would have reduced the risks for increasing respiratory distress or prevented the need for re-intubation, these are important questions for both Speech Pathologists and the primary medical team. [6] The relative cost versus the relative gain from a formal swallow assessment for the ICU patient who develops increased respiratory compromise is a quality and safety issue for the patient and the critical care team.

So, if we cannot yet answer the questions posed above, what conclusions can be drawn from the information provided?

CONCLUSION

The conclusions we can draw from this small sample of ICU patients over a two month period are these:

1. No PEG tubes were recommended by Speech Pathology in either group.
2. 10% of patients in Group 1 received a suggestion for Corpak tube placement while 30% of patients in Group 2 received a suggestion for Corpak tube placement.
3. 30% of patients in the first group had Modified Barium Swallows Studies while 40% of patients in the second group had Modified Barium Swallow Studies.
4. No patients in the first group developed respiratory distress complicating length of stay or requiring re-intubation.
5. 20% of patients in the second group developed respiratory distress with aspiration a consideration but undetermined as a final etiology.
6. The total number of procedures completed by Speech Pathology was three for Group 1, and four for Group 2.
7. Group 2 had an increased number of NPO days.
8. Respiratory distress is often multifactorial and may not result specifically from aspiration, but aspiration does surface as a potential etiology when respiratory distress develops during a hospitalization.
9. Once the issue of respiratory distress and re-intubation surfaced, more procedures and less reliance on clinical bedside swallow evaluation also surfaced.
10. There was increased reliance on use of MBSS once patients had attempted oral feeding and then developed respiratory distress.

IMPLICATIONS FOR SPEECH PATHOLOGY AND FOR THE CRITICAL CARE TEAM

The formal clinical swallow evaluation can be an effective, timely and cost effective strategy for the ICU patient. A Modified Barium Swallow Study is not always needed before starting an oral diet. The best course of action in the critically ill patient who is increasingly challenged by weak breath support might well be to instate NPO status or limit po intake to compensate for generalized weakness, poor endurance and associated weak breath support until respiratory function stabilizes. [7]

While daily intervention from Speech Pathology is not easily proved cost effective in the ICU, an initial clinical evaluation and a limited number of follow up visits can be cost effective by forwarding patient progress through safe oral feeding without incurring the significant cost associated with numerous procedures. While the double blind study is the gold standard for accurate determination of outcomes, most physicians are reluctant to withhold services from one patient while providing them to another patient. Therefore, an ongoing data collection might well be an important starting point for determining patient outcomes. Most importantly, this retrospective analysis will result in the collection of data in our department from the point forward in order to identify the relative cost and safety benefit to the ICU patient from our service, as well as to identify potential costs and complications associated with Speech Pathology recommendations.

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Chapter 25

SPEECH SOUND DISORDERS PROTOCOL GUIDE FOR SPEECH AND LANGUAGE PATHOLOGISTS

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ABSTRACT

Children with speech sound disorders (SSD) dominate the caseloads of many speech and language pathologists (SLPs) and form a heterogeneous group [1,2]. The clinical practice with children with SSD involves several methods and theoretical assumptions. Different procedures should be considered in the assessment of children with SSD, e.g., case history, single word test, stimulability, oral motor-speech, phonological analysis (linear and non-linear), phonological awareness, syllable/ word shapes, intelligibility [3]. Also, a large number of intervention approaches are available for children with SSD [4,5], for example, minimal opposition contrast therapy [6], traditional articulation therapy [7], core vocabulary [8], cycles approach [9], phonological awareness [10]. It has also been suggested that some intervention approaches are more effective for some SSD subgroups [11–14].

More recently SLPs are also encouraged to use the International Classification of Functioning, Disability and Health (ICF) [WHO 15], or the International Classification of Functioning, Disability and Health Children and Youth Version (ICF-CY) [WHO 16] in order to contemplate not only the speech disorders (body structures/ functions) but also its impact in person's activities and participation and the contextual factors (environmental and personal) that affect communication. As professional associations suggests [ASHA 17, RCSLT 18, CASLPA 19] ICF can help SLPs using a common terminology system by adaptation of many classifications that are already in use.

Since clinicians have limited time and access to analyze all of the relevant studies about assessment and intervention for children with SSD and incorporate ICF in their clinical practice, we intend with this chapter to guide them to implement best practice for

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children with SSD in terms of clinical process (since case history to intervention outcomes) and include ICF terminology in all process. Specifically we will present the *SSD protocol guide for SLPs*.

Keywords: speech sound disorders, assessment, intervention, ICF

INTRODUCTION

Speech sound disorders (SSD) are the most common diagnosis made by speech and language pathologists (SLPs) working with preschool and school aged children [1,2]. Some children have a speech sound disorder that is secondary to conditions such as hearing impairment, cognitive impairment or cleft lip and/or palate but for the majority the cause is unknown [2]. In this chapter we will focus on SSD of unknown origin.

Research has showed that SSD form a heterogeneous group, thus several procedures should be used in the assessment and intervention with these children. This chapter will present a proposal for the *SSD protocol guide for SLPs*. This guide provides current information about the terminology, assessment, and intervention and the use of the International Classification of Functioning, Disability and Health (ICF) [WHO 15], and the International Classification of Functioning, Disability and Health Children and Youth Version (ICF-CY) [WHO 16] in these disorders.

SSD PROTOCOL GUIDE FOR SLPs

The International Classification of Functioning, Disability and Health (ICF) is one of the World Health Organization (WHO) frameworks. The previous classification (International Classification of Impairments, Disabilities and Handicaps (ICIDH), published in 1980 focused in the disease, but ICF changes this paradigm, into bio psychosocial paradigm giving much importance to individual health and functioning.

According to Reed et al. [20] the ICF classification allows the documentation of the impact of health conditions on human functioning from the biological, individual and societal perspectives. Thus, ICF classification is very useful for SLP, since communication disorders can implicate body structures and functions and has consequences in person's activities and participation.

Also, ICF integrate contextual factors (environmental and personal factors). In environmental factors it is important to consider many physical, social and attitudinal environment which people live and conduct their lives [WHO 16]. For example, the SLP himself (e355 health professionals) can be considered as a facilitator or a barrier. When SLP is a facilitator he or she helps child with SSD, improving functionality in child's most important contexts (e.g., family routines, kindergarten, school and other social events). ICF conceptualizes functioning and disability as a dynamic interaction between a person's health condition and their Contextual Factors [WHO 15] (see Figure 1).

Several of international professional associations recommend the use of ICF in SLPs clinical practice aiming clinical goals, professional interest and scientific research in communication disorders. ASHA [21] suggests that SLPs apply ICF in all intervention

domains, such as prevention, assessment, intervention and scientific study of communication and swallowing disorders. In the same way, CASLPA [19] encourages the development of outcome measures considering ICF and the ICF-CY classifications.

The Resource Manual for Commissioning and Planning Services for SLCN, published by Royal College of Speech and Language Therapists [22] describes the impact level that speech sound disorders can have in children's system, for each ICF dimensions. The impairment can involve sound production, phonological awareness, phonological processing, phonological template, segmentation skills, mental representation of words in the lexicon and prosody. In the same way, activity can be affected as well, in areas like intelligibility of speech, reading and writing skills. Once reduced, communication skills can affect self-esteem, self-identity, relationships, educational and work attainment [RCSLT, 22].

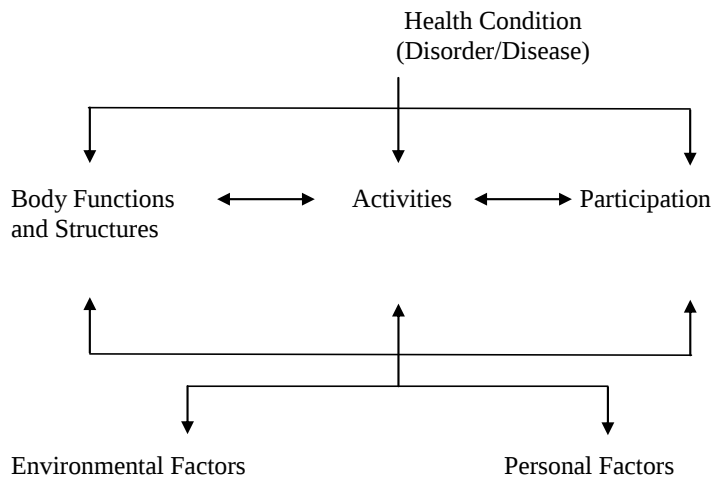


Figure 1. Representation of the *International Classification of Functioning, Disability and Health* (ICF) [WHO 15].

One of the principal aims is to provide an interdisciplinary consensual terminology for health professionals by using a standard language and framework. However, in SSD area there are some issues with the terminology used and the underlying problems for diagnosis description, which could have a considerable impact in assessment and intervention. These particular aspects are discussed in the following sections.

BODY FUNCTIONS

McCormack and Worrall [23] reported the ICF Body Functions related to speech-language pathology. The application of ICF codes to SSD usually contemplates primarily *articulation functions* (b320). Other codes are also referred (*mental functions of sequencing complex movements* – b176 and *fluency and rhythm of speech functions* – b 330) to describe SSD of unknown origin.

In some SSD sub-groups, where linguistic competence is affected (e.g., phonology), it's not common the use of language related codes in the assessment/analysis and intervention [23, 24].

In the authors' perspective, phonology is one of the linguistic domains, so *mental functions of language* (b167) should be used to classify some SSD sub-groups (phonological delay, consistent atypical phonological disorder, inconsistent phonological disorder and CAS/DVD) (see table 1).

Table 1. SSD sub-groups proposed by Dodd [25] and possible related ICF codes

Dodd's five subgroups	Codes usually used to classify SSD [24]	Proposal considering phonology as a linguistic process*
Articulation disorder	b320	b320
Phonological delay	b320	b167 b320
Consistent atypical phonological disorder	b320	b167 b320
Inconsistent phonological disorder	b320	b167 b320
Childhood apraxia of speech (CAS)/ Developmental verbal dyspraxia (DVD)	b320	b176 b320 b167

* Codes are hierarchy organised by level of impact.

ACTIVITY AND PARTICIPATION

The Activities and Participation component of the ICF describes the human functioning from the individual to a societal perspective. So the *activity* is referred to “the execution of a task or action by an individual” - individual perspective. *Participation* include “involvement in a life situation” - societal perspective [WHO, 16].

Regarding the third chapter of ICF, the *Activity and Participation component* focuses on *Communication* describing it in terms of type of message received or produced (*communicating - receiving* (d310-d329) and *communicating - producing* - d330-d349), whether it is non-verbal or verbal (modality) and in terms of the modality the person uses to communicate like body gestures and drawings. However, communication activity and participation is also mentioned in other chapters like *learning and applied knowledge* or *interpersonal interactions and relationships* [26].

CONTEXTUAL FACTORS

The second part of ICF is related to Contextual Factors that “represent the complete background of an individual's life and living” (WHO, 2001, p. 16) and contain two components - Environmental Factors and Personal Factors. Environmental Factors include all aspects of the external world of an individual's life that may have an impact on his or her

functioning. Personal Factors comprise “features of the individual that are not part of the health condition” such as gender, age, and coping styles (WHO, 2001, p. 17).

CLINICAL HISTORY

Case history questions allow SLPs to obtain background information about the child to a better understanding of the problem and to plan treatment. This section will focus on specific questions for SSD and its relation to ICF.

The aim of the questions about communication history is to determine if the child has evidenced delay in the attainment of principal language milestones [27]. Questions about birth and medical history are included to know if any medical factors could have influenced communication development, to conclude if the child has a SSD secondary to other condition (e.g., hearing impairment – b230 hearing functions) or an SSD of unknown origin.

When SLP do the child's clinical history, he or she should also consider environmental factors like *support and relationships* (e3), such as *immediate family* (e310) or *friends* (e320), or *attitudes* (e4) (e.g., *individual attitudes of immediately family members* (e410). Thus, social history will help to determine if a child has had opportunities to communicate and if the environment is sufficiently rich to foster adequate communication development [27]. It is also important to know for example if the caregivers are always correcting speech errors because too much correction can have a negative impact (e.g., frustration). It is essential to balance between correcting errors, praising success and letting some errors pass [28]. It is very important to know about the environmental factors and assess their impact on SSD and intervention process.

Finally, the aim in obtaining an education history is to know if a child has received school services (e.g., regular class at school (e585)) and also if he or she received any special services (special education and training services (e5853)) [27].

ASSESSMENT

Different procedures should be take into account in the assessment of children with SSD, specifically, case history, single word test, stimulability, oral motor-speech, phonological analysis (linear and non-linear), phonological awareness, syllable/ word shapes, intelligibility [3]. McLeod and Threats [24] presented a list of assessments and analysis of SSD children's and the ICF-CY codes usually associated: *auditory perception* (b1560), *fluency and rhythm of speech functions* (b330), *mental function of sequencing complex movements* (b176), *articulation function* (b320) (body functions); *structure of the mouth* (s320) (body structures); *learning to read* (d140), *communication* (d3), *interpersonal interactions and relationships* (d7), *major life areas* (d8), *community, social and civic life* (d9) (activity and participation).

Considering that SSD covers different underlying problems (e.g., motoric, phonological) in the present proposal other codes should be added to a better description of the assessment/analysis used. For example when the SLPs use a phonological analysis in a child with a phonological delay or disorder, the code *mental functions of language* (b167) seems to help in a better representation of the type of SSD, because in a phonological perspective

phonology is part of language. Mental functions of language refer to "specific mental functions of recognizing and using signs, symbols and other components of a language" (WHO, 2007, 58) and phonology is one of the language components. It is important to dissociate phonetics (articulation based problems) from phonology (linguistically-based problems) [29,30]. Thus, in a way to improve evidence-based practice, this underlying concept should be present in the assessment and intervention with children with phonologically based SSD.

INTERVENTION APPROACHES FOR CHILDREN WITH SSD

At the moment different intervention approaches are used for children with SSD [4,5], e.g., minimal opposition contrast therapy [6], traditional articulation therapy [7], core vocabulary [8], cycles approach [9], and phonological awareness [10].

Table 2. Comparison of the Impairment Scale proposed by Enderby et al (2006, p. 90) and ICF Body Functions and Structures extent or magnitude scale of an impairment (WHO, 2001) for phonologically based SSD

Enderby et al. (2006)	ICF
Impairment	Body Functions and Structures
0 Totally limited sound system; uses no recognisable consonants.	xxx.4 Complete impairment (total,...) 96-100%
1 Speech system restricted; uses a few recognisable sounds including some consonants.	xxx.3 Severe impairment (high, extreme,...) 50-95
2 Good use of consonants and vowels at single word level but poor transfer of sounds into sentences. May have 25% to 50% suppression of inappropriate processes.	xxx.2 Moderate impairment (medium, fair,...) 25-49 %
3 Capable of clear speech when thinking about it and prompted, but clarity deteriorates in spontaneous speech. May have 50% to 75% suppression of inappropriate processes.	
4 Persistent minor immaturities; may have typical processes at a later age or one atypical process.	xxx.1 Mild impairment (slight, low,...) 5-24 %
5 Age-appropriate speech	xxx. 0 No impairment (none, absent, negligible,...) 0-4 %
	xxx.8 not specified
	xxx.9 not applicable

Intervention studies indicated that some intervention approaches are more effective for some SSD subgroups, for example phonological therapy was found to be more effective than articulation therapy for children with phonologically based SSD [13,14]. Also, according to Dodd and colleagues [11,12] children with inconsistent phonological disorder received most

benefit from the core vocabulary approach and children with consistent speech disorder improved more with phonological contrast therapy.

Concerning outcome measures, studies typically provide speech severity indices, for example, percentage of occurrence of phonological processes and percentage of consonant correct (PCC) score [4]. However, intelligibility should also be used as an outcome measure as with this measure we can analyse the impact of the disorder in the activity and participation level (see Tables 2 and 3).

Table 3. Comparison Activity and Participation scales of ICF (WHO, 2001) and Enderby et al. (2006, p. 90) for phonologically based SSD

Enderby et al. (2006)		ICF
Activity	Participation	Activity and Participation
0 Completely unintelligible to familiar and non-familiar listeners.	0 Unable to fulfil any social/educational/family role. Not involved in decision-making/no autonomy/ no control over environment, no social integration.	xxx.4 Complete difficulty (total,...) 96-100%
1 Partly intelligible to familiar listeners in known context; communication partner bears the burden of the responsibility.	1 Low self-confidence/poor self-esteem/limited social integration/socially isolated/contributes to some basic and limited decisions. Cannot achieve potential in any situation.	xxx.3 Severe difficulty (high, extreme,...) 50-95
2 Intelligible to familiar listeners in context; partly intelligible in context with non-familiar listeners; single words clear, connected speech poor.	2 Some self-confidence/some social integration/makes some decisions and influences control in familiar situations.	xxx.2 Moderate difficulty (medium, fair,...) 25-49 %
3 Usually intelligible to familiar listeners in and out of context; variable intelligibility in context with non-familiar listeners; free, spontaneous speech often unintelligible.	3 Some self-confidence; autonomy emerging. Makes decisions and has control of some aspects of life. Able to achieve some limited social integration/educational activities. Diffident over control over life. Needs encouragement to achieve potential.	
4 Minor problems but intelligible to everyone; occasionally loses intelligibility at times, for example when excited or speaking against noise, etc.	4 Mostly confident; occasional difficulties integrating or in fulfilling social/role activity. Participating in all appropriate decisions. May have difficulty in achieving potential in some situations occasionally.	xxx.1 Mild difficulty (slight, low,...) 5-24 %
5 Intelligible at age-appropriate level to familiar listeners and non-familiar listeners.	5 Achieving potential. Autonomous and unrestricted. Able to fulfil social, educational and family role.	xxx. 0 No difficulty (none, absent, negligible,...) 0-4 %
		xxx.8 not specified
		xxx.9 not applicable

In Table 4 it is proposed a checklist of ICF codes for SSD, which contains the possible codes (body functions and structures, activity and participation, environmental factors) to be

used along the clinical process i.e., since clinical history to intervention. Despite some of the codes are not essential (e.g., structure of mouth) in SSD of unknown origin, we also include it because it is important in a way to establish the differential diagnosis between a primary and a secondary SSD.

Table 4. Checklist – ICF codes for SSD

Checklist - ICF codes for SSD (WHO, 2001; WHO, 2007)

Name: _____

Date: ____/____/____ Diagnose: _____

Speech and Language Pathologist: _____

Observations: _____

	Qualifiers						
Body structures	0	1	2	3	4	8	9
Chapter 3 - Structures involved in voice and speech							
s310 Structure of nose							
s320 Structure of mouth							
Chapter 7 - Structures related to movement							
s710 Structure of head and neck region							
Other codes							

Body functions	0	1	2	3	4	8	9
Specific mental functions							
b156 Perceptual functions							
b1560 Auditory perception							
b 167 Mental functions of language							
b16708 Reception of language, other specified							
b16718 Expression of language, other specified							
b176 Mental function of sequencing complex movements							
Voice and speech functions							
b320 Articulation functions							
b330 Fluency and rhythm of speech functions							

b3300 Fluency of speech							
b3301 Rhythm of speech							
b3302 Speed of speech							
b3303 Melody of speech							
Other codes							
Activity and Participation	0	1	2	3	4	8	9
Chapter 1 - Learning and applying knowledge							
Basic learning (d130-d159)							
Applying knowledge (d160-d179)							
Chapter 3 - Communication							
Communicating - receiving (d310-d329)							
Communicating - producing (d330-d349)							
Conversation and use of communication devices and techniques (d350-d369)							
Chapter 7 - Interpersonal interaction and relationships							
General interpersonal interaction (d710-d729)							
Particular interpersonal relationships (d730-d739)							
Chapter 8 - Major life areas							
Education (d810-d839)							
Chapter 9 - Community, social and civic life							
d920- Recreation and leisure							
Other codes							
Chapter 1 - Products and technology							
e115 Products and technology for personal use in daily living							
e125 Products and technology for communication							
Chapter 3 - Support and relationships							
e310 Immediate family							
e315 Extended family							
e320 Friends							
e325 Acquaintances, peers, colleagues, neighbours and community members							
e330 People in positions of authority							
e355 Health professionals (SLP and others)							

Table 4. (Continued)

e360 Other professionals							
Chapter 4 - Attitudes							
e410 Individual attitudes of immediate family members							
e415 Individual attitudes of extended family members							
e420 Individual attitudes of friends							
e425 Individual attitudes of acquaintances, peers, colleagues, neighbours and community members							
e450 Individual attitudes of health professionals							
e455 Individual attitudes of other professionals							
Chapter 5 - Services, systems and policies							
e580 Health services, systems and policies							
e585 Education and training services, systems and policies							

CONCLUSION

Considering that ICF framework is recommended for SLPs clinical practice, the main goal with this chapter was to highlight not only the disorder but also the interaction between body structure and functions and environmental factors (positive - facilitators or negative - barriers) that have an impact on impairment and functioning levels. Thus, it is important to analyse all these components to an holistically assessment of SSD children.

In the first approaches about the use of ICF related to SLPs, some authors have been presented ICF codes that could be used to describe SSD children. However, the main code commonly used for all SSD is *articulation functions*. With the presented proposal we intend to describe phonologically based SSD using ICF codes (e.g., mental functions of language) considering the underlying phonological deficit since phonology is a language domain.

Finally it was proposed a checklist that is useful for SLPs during all the clinical process, with relevant codes that could describe children with SSD. The SLPs usually obtain information during clinical history, assessment, intervention and analyses of the efficacy and efficiency of treatment. The ICF can help the clinician in all these stages and also contribute to measure intervention outcomes.

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Chapter 26

A PLAY TOOLKIT USED IN EARLY LANGUAGE INTERVENTION

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ABSTRACT

Special educators often promote young children's pretend play abilities with play intervention methods because of the observed relationship between play skills and cognitive, social, and language development [1]. In a 1993 study, teachers reported that approximately 75% of children with language disorders need assistance with social play skills [2]. However, in his 1997 review of research on the symbolic play skills of children with language disabilities, M. W. Casby discovered play abilities not to be very lacking in these children [3]. Most importantly, their capabilities for using symbolic ideas in play may be similar to those of children without language disabilities, revealing "a symbolic *performance* deficit more so than a symbolic *competence* deficit. In pretend play, difficulties with language consistently get in the way of making play themes and roles explicit. Similarly, Guralnik [4] found that children with mild language disabilities tend to progress like their peers in terms of play, steadily transitioning from solitary to parallel to social play, for example, but simply taking longer to do so.

There is a growing body of evidence supporting the role not only of language proficiency in pretend play but also of pretend play in the acquisition of language [5]. Specifically, the use of a variety of props and objects, combining multiple roles and themes, and creating pretend scenarios provide the best opportunities for fostering language growth. Using clearly defined, measurable language goals, the speech-language pathologist (SLP) can promote language growth by working through a pretend play developmental hierarchy. Initially, realistic props not only expand vocabulary of common objects and their functions but also help children maintain their roles and remember their play scenario while acting out activities of daily living. As pretend play advances, props become more symbolic, often taking on more than one function during play (e.g., a box used as a boat can be flipped over to be used as a cave). The SLP progressively

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introduces these open-ended and multi-functional items as a child's linguistic structures emerge and evolve so as to establish their relationships. Eventually, children will learn to make their own props (e.g., play dough can be shaped into a pizza) [6]. This chapter offers the SLP a play toolkit that implements a hierarchy of pretend play techniques to advance the linguistic competence of language-delayed preschoolers.

Keywords: early intervention, play, language

INTRODUCTION

As a natural activity of early childhood, play has great relevance in the field of pediatric language delays and disorders. This chapter presents a review of literature regarding the importance of play in language development and how play is used in early language intervention.

In 1969, Piaget and Inhelder [7] proposed that, as cognition is a necessity for language acquisition, so is language part of the underlying framework for human mental representational abilities. Furthermore, symbolic play is a surface manifestation of cognitive ability [7]. Therefore, development in symbolic play must parallel development in language, as each depends on the advancement of the other, for they belong to one underlying system of mental representational capacity.

The homologue model proposed by Bates [8] also supports and explains the high correlation between symbolic play and language. This model confirmed that language and cognition both developed as stems of an underlying system of cognitive operation. Therefore, child's play skills should correlate with his or her language development. The model also advocated that language development assists the development of symbolic play skills. Therefore, the two should have a direct correlation, and symbolic play development can be attributed to the language learning process.

Lifter and Bloom [9] found that advances in play and increases in receptive and expressive language emerge in concert with each other. For example, the emergence of constructing relationships between objects in play coincided with the emergence of first words. In addition, the vocabulary spurt occurred when children were learning specific relations between objects in play, such as using soap to give their doll a bath. They also found that these developments occurred simultaneously despite the variability in chronological ages the children reached these developmental achievements. Developmental advances between play and language have also been found in other studies [10, 11].

Piaget helped us to understand the relationship and connection between play and language from the child's view. "The child does not, in the first instance, communicate with his fellow beings in order to share thoughts and reflections; he does so in order to play" [12]. It is clear to all who witness children at play that they find it rewarding and motivating. Piaget [12] first divided the sequence of children's play development into three broad categories: practice play, symbolic play, and play with rules.

NORMAL DEVELOPMENT OF PLAY AND LANGUAGE

Much can be revealed about the developmental status of an infant, toddler, or young child through the observation, assessment, and evaluation of his or her play. A number of professionals have noted that play is a developmental domain that is critical to early language intervention [13-15]. In fact, the development of play demonstrates a strong relationship with the constructs of the sensorimotor and preoperational periods of cognitive development [16-18]. The SLP must be an expert in aspects of play. Play activities, behaviors, and interactions are very often some of the only performances available for observation of infants, toddlers, and children suspected of having a developmental delay. Thus, play in and of itself can be the basis of a valuable developmental assessment and intervention strategy. Rossetti [13] suggested that eliciting, observing, and describing the play of infants will give the clinician the direction needed for intervention efforts.

The early play behavior of infants and toddlers is reflective of early cognitive development. For example, the early levels of sensorimotor-exploratory play and nonfunctional relational play are reflective of the early stages of sensorimotor development, whereas later forms of play, such as functional-conventional and symbolic, indicate later stages of sensorimotor development as well as early aspects of preoperational development [14]. Some researchers believe that symbolic play is an early demonstration of young children's developing mental representation and symbolic capacity and functioning [10,12]. A number of investigators have explored the developmental relationship between symbolic play and language [16-18]. The general consensus of this line of inquiry has been that early language development and symbolic play are closely correlated. Children diagnosed with specific language impairment have been researched extensively in regard to play and have consistently been found to have delays in symbolic play [19,20]. One consensus finding has been that the younger a child with developmental disabilities is, the more likely he or she is to demonstrate difficulties in play, particularly symbolic play.

The development of communication should be assessed from birth onward as infants achieve cognitive milestones that prepare them for language. Before infants are verbal, they learn to think about means and ends. For example, they may learn to pull a cloth to retrieve a toy. They also watch their caregivers and learn. An infant may copy a caregiver's actions hours after having observed the behavior. Copying an action after a delay requires the construction, storage, and retrieval of mental symbols. These cognitive achievements reflect symbolic thought and help prepare infants to use words to communicate. Observation of infant play can help determine if they are using means and ends as well as deferred imitation behaviors within the expected time frame of development.

Infants become involved in social interaction long before they begin using words. By the end of seven months, many infants are able to turn their heads when hearing their name, smile back at another person and enjoy social play such as peek-a-boo. Joint attention and shared reference are crucial social skills that develop between nine and twelve months of age. These behaviors refer to an infant's use of communicative intent, such as smiles and gestures, to gain attention of others. It is common for an infant to repair a failed communication by trying another strategy, such as squealing or crying to gain social attention. Gestures such as pointing, smiling and gaze direction are precursors to verbal language. The use of pointing is particularly important to guide the attention of others toward objects and events.

Questionnaires and checklists for parents, such as the Modified Checklist for Autism in Toddlers-Revised (M-CHAT-R) [20] and the MacArthur-Bates Communicative Development Inventories [21], are important sources of information about an infant's gestural expression. When observations suggest delayed development, referral to a developmental pediatrician is recommended.

Some children may possess functional play skills, such as pushing a toy train around a track, but will have difficulty with symbolic play and play that involves joint engagement with others [22,23]. The emergence of symbolic play is considered an important precursor to language development [15]. During the first year of life, sensorimotor, or practice, play emerges with the child manipulating objects (e.g., mouthing, holding, banging, dropping, etc.). At approximately twelve months, the child begins to combine objects in relational play (e.g., stacking, nesting, building a tower of two blocks). Functional play (e.g., rolling or throwing a ball, drinking from a cup) also begins to occur in a child's second year. This is followed by symbolic, or make-believe, play. Symbolic play may be self-directed, such as pretending to drink from a cup, or other-directed, such as pretending to give the doll a drink. Self-directed play begins before other-directed play.

METHODS

Developmental Assessment of Play

The preceding has concerned the development of early cognition, play and language. This information is significant to speech-language pathologists involved in early intervention. This section presents a criterion-referenced, descriptive, and developmentally-based protocol for the dynamic observation and assessment of the play behavior of infants, toddlers, and young children. This protocol was developed from the wide array of studies that show the high level of validity and reliability of such measurement of play [24]. The assessment of play behavior must take place in a comfortable environment for the child and should feel as natural as possible. Present should be the speech-language pathologist, the child, and a parent or caregiver in the child's daily life. Symbolic play assessment provides the child objects with the potential to be transformed in play, that is, capable of standing in or substituting for other objects [25,26]. An assortment of objects is always presented, along with a standard set of representational objects. One possibility could be a teddy bear with blanket, bed, bottle, washcloth, and hairbrush, presented with blocks and objects of varying geometric shapes (e.g., cones, dowels, ovals, and circles), an assortment of balls, and a few sheets of paper. Either the SLP or the parent or guardian sits near the toys with the child and encourages him or her to complete a play theme (e.g., feeding the teddy bear and putting it to bed). The SLP ensures the use of both traditional, representational objects, such as the teddy bear and bed, and nonstandard objects in each play theme, occasionally encouraging substitution with the latter (e.g., giving the child a circle shape to represent a cookie, offering a sheet of paper in place of the blanket, etc.). The modeling of play, or imitative strategy, is an effective way of examining a child's zone of proximal development in the domain of play [27]. It has been repeatedly shown to elicit valid and reliable play behavior from typically developing children as well as children with a number of developmental delays [28-30]. However, the child

should also be encouraged at some point in the evaluation to play alone with the set of objects so that one may compare his or her level and quality of play when alone, when with others, and when provided various forms of scaffolding. Furthermore, given that young children with developmental delays tend to demonstrate more variability in their play performances than do normally developing children, it is especially important to assess their play abilities based on repeated observations over time [31]. Each evaluation should be videotaped for later scoring.

It is essential to evaluate a child's play against the normal developmental sequence. In 1991, Casby [25] outlined the natural development of play using four developmental phases and described symbolic play in terms of its three major functional components: agent, instrument, and scheme [25] (See Table 1.) His model supports the premise that children of different developmental levels will play differently with the same toys. Performing a behavioral assessment with this model helps the SLP quantify emerging play skills as well as those that have been mastered.

Language Intervention Using Play as an Important Domain

Pretending and language are each, at their core, modes of symbolic thought. During pretend play, a block can stand in for a school bus. In language, letters and words represent concepts, objects, or events. Children practice creating symbols as they mentally transform objects during their play. Furthermore, the more time children spend pretending, the more opportunities they create to practice using language. During pretend play, children talk more, speak in lengthier utterances, and use more complex language (e.g., future tense, interrogative clauses, conditional verbs, descriptive adjectives, mental state verbs) than when engaged in other activities [32]. Moreover, Fisher [32] reported that a kindergartener's vocabulary correlates with the amount of time he or she spent talking with peers at three years of age during pretend play.

In addition to language proficiency, pretend play contributes to a child's development of narrative abilities. The child must communicate his or her own ideas in joint creation of a play theme with their SLP. They also must integrate their SLP's ideas into a coherent narrative. Children may be better prepared to understand narratives when they have experienced or practiced similar concepts through play, such as creating descriptions to support a fantasy scenario. Through training in mature pretend play, children learn to use toys and props symbolically, develop narratives, maintain roles, and plan play scenarios from beginning to end [33].

Four key elements are needed to create the optimal early intervention treatment environment: (a) exposure, (b) deliberateness, (c) recurrence, and (d) responsiveness [31].

(a) Exposure refers to the linguistic input that is actively provided within the treatment setting. In some exposures, the child may be required to respond verbally and in others the child may be simply taking in the model of the appropriate linguistic structure. Children do not need to overtly produce or imitate language to acquire key language forms and concepts. Incidental exposures to language in a meaningful context can also be effective for language learning. (b) The SLPs are deliberate and intentional in the language that they choose. (c) Recurrence refers to the importance of repetition for children in acquiring linguistic concepts. For example, language delayed preschoolers require many opportunities to process new vocabulary. Through guided play, the highly skilled SLP provides many targeted learning

experiences. (d) Responsiveness refers to the SLP's sensitivity to the child's developing communicative competencies. Responsiveness to children and use of child-initiated themes have repeatedly been associated with language gains in children [33].

Table 1. Natural Development of Play

Phase			Age of Emergence	
Sensorimotor–Exploratory			2-4 months	Reaching, grasping, holding, rubbing, mouthing objects; repetitive pounding and hitting of objects
Relational–Nonfunctional			6-10 months	Relating objects to one another without regard for their social–conventional use (e.g., holding two or more objects, pushing objects together, stacking, bumping, nesting, offering objects to and taking objects from others)
Functional–Conventional			10-12 months	Relating objects to one another in a social–conventional manner; objects are used functionally in typical context (e.g., pushing toy car, scribbling with real crayon, putting cup on saucer, stirring bowl with spoon, feeding doll from toy bottle)
Symbolic	Agent	Self as the Agent	12-18 months	Child is both initiator and recipient of play actions (e.g., pretends to drink from a cup, pretends to talk on play telephone, brushes own hair during play cleaning/dressing)
		Passive-Other	18-24 months	Child begins to use substitute agents but does not animate them (e.g., puts cup to doll's or teddy bear's mouth, puts telephone to teddy bear's mouth and ear, brushes doll's hair)
		Active-Other	24-30 months	Child animates substitute agents (e.g., makes drinking sounds while pretending doll or teddy bear is holding the cup to its mouth, speaks for teddy bear when it is "on the phone," pretends doll is brushing its own hair)
	Instrument	Realistic Object	10-12 months	Relating objects to one another in a social–conventional manner; objects are used functionally in typical context (e.g., pretending to drink from cup, pushing toy car, coloring with real crayon) (See Functional-Conventional Phase.)
		Substitute Object	18-24 months	Substituting another object for the standard one in play (e.g., using a cone as a rocket, pretending to use a block as a cup or a dowel as a crayon)
		Imaginary Object	24-30 months	Performing an object-action scheme without the use of an actual object (e.g., pretending to talk on an imaginary telephone, pretending to drink from an imaginary cup)
	Scheme	Single	12-18 months	Carrying out a single play act (e.g., guiding toy car, pretending to drink from cup and placing it on saucer)
		Multiple	18-24 months	Carrying out sequences of two or more play acts (e.g., pretending to cut food with knife, eat off plate with fork, and then drink from cup; pretending to comb own hair and then the hair of another)
		Complex/Planned	about 30 months	Carrying out a sequence of theme-related play acts (e.g., cooking a pretend meal, setting a table for two, and then chatting with a doll over lunch)

Perhaps the most important aspect of intervention is to follow the child's lead. SLPs can observe what the child likes and dislikes and respond accordingly. They can also engage the child in theme-related conversations, ask questions, and respond to the child's ideas in a way that encourages use of targeted linguistic structures. A child may be struggling verbally during a conversation, but still be actively engaged and intrinsically motivated. At the mid-point between play and work, the child's motivation, coupled with guidance from the SLP, can create robust opportunities for language learning [34].

A language-rich treatment session involves SLPs who deliberately use language-stimulation strategies when interacting with children. Girolametto and Weitzman [34] identified eight key strategies that when used appropriately advance language development: waiting, pausing, confirming, imitating, extending, labeling, open questioning, and scripting.

- **Waiting:** Speak slowly and do not rush or dominate the conversation.
- **Pausing:** Encourage turn-taking during conversation and take care to be at eye-level with the child.
- **Confirming:** Respond to the child's interaction by commenting, smiling, and/or nodding.
- **Imitating:** Repeat what the child has stated in an affirming manner.
- **Extending:** Repeat the child's verbal responses and add verbal information. *Child:* I made a tower. *SLP:* You made a tall tower.
- **Labeling:** Label objects and object actions as well as feelings and reactions.
- **Questions:** Ask questions to encourage verbal interaction during play.
- **Scripting:** Describe the steps in a process. (e.g., "First you take the lid off the paint, then you carefully pour some in the tray, and then you can begin painting. Can you tell me what you do first?")

Table 2. Emerging Play with Corresponding Emerging Language

Emerging Play Level	Emerging Language Level
Child begins to involve relationships between objects as well as between objects and people. (Basis for object permanence; cause and effect)	<i>Content:</i> "first words" (e.g., more, in, out) <i>Form:</i> single words <i>Use:</i> joint attention
Child represents familiar activities of daily living by linking actions into a planned, multi-scheme sequence. Begins to substitute one object for another. <i>Example:</i> Child uses play block as bar of soap to wash puppy (stuffed animal), then wraps puppy in towel	<i>Content:</i> a variety of behavior-specific words (e.g., puppy, dirty, wash, dry) <i>Form:</i> single words as well as simple phrases and sentences, such as verb-object and subject-verb-object (e.g., "wash puppy", "I give bath.") <i>Use:</i> announcement of action

Girolametto, Weitzman [34] categorized these language stimulation techniques into child-oriented responses, interaction-promoting responses, and language-modeling responses. Justice [31] elaborated on the techniques: "Child-oriented responses, which are used to create and maintain a shared conversational focus between adult and child, include waiting and extending. Interaction-promoting responses, which encourage the child into active dialogue, include pausing, open questioning, imitating, and confirming. Language-modeling responses provide children with demonstrations of linguistic forms, content and use. These responses include labeling and scripting." By using language stimulation techniques during play

scenarios the SLP increases his or her responsiveness to the child's language competencies and provides the proper scaffolding to enhance language skills. In turn, the child learns to produce language that meets their individualized and targeted goals [34-39].

The steps of a language treatment session using play to extend language and new learning are listed below.

1. Arrange a setting that contains materials for play that are of interest to the child and are appropriate for the child's level of play.
2. Wait for the child to initiate an interaction about an object of interest.
3. Elaborate upon child responses.
4. Expand and extend the language and play, working on emerging objectives.

The Role of Parents and Caregivers

Parents and caregivers are often the child's first play partners. Starting in infancy, parents initiate play with children through simple games like peek-a-boo. By the child's second birthday, parents and children should regularly engage in pretend play. Early involvement from parents as initiators, directors, and partners in play serves to introduce children to more structured play by adding concepts and vocabulary that they would not be exposed to playing alone or with peers.

Table 3. Play Toolkit

Toy Complexity Continuum	
Cause and Effect	These toys are designed for a distinct effect (e.g., jack-in-the-box, ball-and-hammer toy)
Closed-Ended	Playing with these toys guides conversation along one avenue and involves a distinct beginning and end. (e.g., Mr./Mrs. Potato Head, ring stacker, puzzles)
Open-Ended	These toys never suggest completion and may lead conversation in any number of directions. (e.g., blocks, Legos, dollhouse)
Joint Play	These games are important for socialization. (e.g., follow-the-leader, duck duck goose, hide and seek, red light-green light)
Music/Song Games	(e.g., ring around the rosie, London bridges, parachute, the hokey pokey)
Turn-Taking Games	(e.g., bean bag toss, bowling games, board games)
Pretend Play	Child imagines his or herself into the play unfolding
	Performs sequences of actions within scenarios
	Role-plays with occupations, characters, animals, etc.
Play Centers/ Social Pretending	(e.g., doctor's office, grocery store, school, restaurant, camping)
Common Object Box	
Used for identifying, demonstrating, and naming objects and their functions	(e.g., farm animals, phone, keys, car, hat, shoe, sock, sunglasses, brush, ball, bowl, spoon, cup, book, etc.)
Pretend-Play Props	Boxes and containers of various shapes and sizes
	Dress-up clothes, shoes, hats, bags, and aprons
	Kitchen and household items, both toy and real (e.g., measuring cups, wooden spoons)
	Specialty items such as a doctor kit or a toy workbench and tools
	Puppets, stuffed animals, baby dolls, and caregiving items such as bottles, blankets, and diapers

Guided play can take two forms. At a very basic level, parents can enrich their child's environment by providing objects or experiences that promote language learning. In the more direct form of guided play, parents can scaffold their child's play by joining in the fun as a co-player, asking thoughtful questions, commenting on children's discoveries, and encouraging further exploration. The idea that children can benefit from parent guidance and participation in play is empirically supported.

In the clinical setting parents and caregivers are actively involved in observational learning, where they view and discuss treatment sessions with the SLP. If parents and primary caregivers are not able to attend treatment sessions, they can also learn language stimulation strategies by viewing their child's video-taped treatment sessions.

SUMMARY

In summary, play is an important domain for the assessment and treatment of delayed language development in infants and children. However, there is a long standing tradition in play research of focusing primarily on free play. The majority of studies have been done in naturalistic settings with children engaged in free play and little or no adult responsiveness or clinical intervention. The limited research concerning early play, cognitive and language development has consistently found compelling correlations. Further research is needed to examine the benefits to language delayed children of early, developmentally appropriate, intensive language therapy in a play-based environment.

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Chapter 27

THE IMPACT OF PROTRACTED PHONOLOGICAL DISORDERS ON LITERACY OUTCOMES IN CHILDREN: A META-ANALYSIS

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ABSTRACT

Background: The literature is equivocal on whether children with protracted phonological development (PPD) are at risk for literacy acquisition, making it challenging to provide relevant evidence-based phonological intervention. Differences in researchers' definitions of PPD have possibly contributed to the contradictory outcomes.

Purpose: The purpose of the meta-analysis was to determine the consistency of word-level literacy differences for children with and without PPD, and whether such differences are moderated by definitions of PPD.

Method: Eligible studies had measured at least one word-level literacy construct in school-aged children with and without PPD. Fifty-two evaluated papers generated 64 independent samples to examine: *Phonological awareness (PA; n = 20)*, *Word decoding (DEC; n = 17)*, *Fluency (FL; n = 4)*, *Nonword decoding (NWD; n = 9)* and *Spelling (SP; n = 14)*. Multiple regression analysis of a model that included all constructs was significant, $F(4,60) = 85.96, p < .001$ ($t = 5.71, p < .001$). Sample sizes allowed moderator testing for PA, DEC, NWD, and SP. A random effects model was used to compare *mean unbiased d* (weighted by the *inverse variance* and *Random Effects Variance Component*) on the *Q*-statistic ($p < .05$).

Results: For *unbiased Cohen's d*, *95% Confidence Intervals* and *95% Credibility Intervals* were significant for PA ($d = .85$), NWD ($d = .50$), and SP ($d = .84$), but not DEC ($d = .63$) and FL ($d = 3.04$). Cultural context was a significant moderator of SP, suggesting dialectal influences. In defining PPD, age at literacy evaluation, severity/sub-type and resolution of PPD significantly moderated NWD ($Q = 14.21$) and SP ($Q = 8.00$). Complexity of speech context, particularly inclusion of multisyllabic word (MSW) evaluations, was a significant moderator of PA ($Q = 4.85$), DEC ($Q = 4.14$) and

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SP ($Q = 5.66$). Differences between children with and without PPD were greater in initial phases of childhood literacy compared with later phases.

Conclusion: In both initial and later phases of childhood literacy, early spoken phonological intervention seemed relevant to mitigating differences between children with and without PPD, although results were limited by the number of studies examined. To define PPD, spoken MSW phonology appeared important; a theoretically grounded continuous metric could increase study power, whether or not categorical samples are available.

Keywords: literacy, multisyllabic words, phonology, phonological awareness, phonological disorders, protracted phonological development, reading, speech delay, speech sound disorders, spelling, typical phonological development

INTRODUCTION

Over the past two decades, a number of studies have evaluated the relationship between phonological development and literacy outcomes. [1-14] Research evidence concerning the relationship between phonological and literacy development provides a foundation for clinicians providing therapy to children with difficulties in either or both areas. A meta-analysis was conducted for the current chapter on this topic, examining studies that included children with typical versus protracted phonological development. The term *Protracted Phonological Development (PPD)* encompasses various other terms in the literature, including: (a) combinations of *Phonological*, *Speech Sound*, *(In)Consistent Speech*, *(Developmental) Speech*, or *Articulation*, with one of *Disorder*, *Impairment*, *Delay*, or *Errors*; and (b) *Developmental Verbal Apraxia* or *Childhood Apraxia of Speech*. For the various studies, researchers typically sampled SLP caseloads of children with clinical diagnoses of protracted phonological development (PPD), the majority having received phonological intervention. However, an examination of the studies shows contradictory literacy outcomes that at least in part seemed to reflect differences in research methodology. These methodological differences include broader developmental considerations such as age at literacy evaluation and co-occurrence of other conditions, such as *Protracted Language Development (PLD)*. In particular, children designated with severe or persistent PPD appeared to have lower literacy outcomes than those with less severe PPD. [15-17] Thus, differences in participant selection, possibly reflecting researchers' definitions of PPD, might subsequently have contributed to the apparent contradictions.

Thus, for the meta-analysis discussed in the current chapter, a variety of methodological parameters were examined relative to age of literacy acquisition and characterization of PPD through traditional severity rankings, sub-types, resolution, and the complexity of speech context assessed. While accounting for association with PLD, therapy history and other differences in study design, the analysis aimed to (a) summarize and quantify literacy outcomes, and (b) statistically explain the variation in these outcomes in terms of age and the selected PPD parameters.

In addition to selecting participant variables related to age and characterization of PPD, relevant literacy outcomes were identified. Spoken phonology is reported to be directly related to word level literacy but only indirectly to comprehension. [18, 19] Thus, the meta-

analysis examined literacy constructs most likely connected to the cognitive organization of the speech sound system: (a) phonological awareness, (b) word decoding, (c) fluency, (d) nonword decoding, and (e) spelling. As background, the following sections describe key parameters for the analysis: characterization and evaluation of PPD and literacy constructs included, and literacy outcomes for children with protracted versus typical phonological development.

LITERACY AND THE CHARACTERIZATION OF PROTRACTED PHONOLOGICAL DEVELOPMENT

Authors have noted an overlap of PPD, Protracted Language Development (PLD), and lags in literacy attainment, [2, 20, 21] which Peterson, McGrath, Smith and Pennington (2007) [22] suggest could arise from a shared risk factor for phonological deficits, but also factors unique to each. Studies of children with PPD, in the absence of co-occurring PLD, have demonstrated inconsistency relative to literacy outcomes, with some results showing low risk, [6, 23, 24] and others, high risk. [8, 25] Researchers have reported the lowest literacy outcomes for children described as having more severe or persistent PPD. [16, 26] However, the characterization of PPD and its relative severity differ across the studies.

These differing perspectives on PPD have concerned the relevance of: (a) continuous [27] versus discrete categories of severity [28] versus sub-types of PPD [29, 30, 31]; (b) resolution or persistence of PPD [10, 32]; and (c) evaluation method with respect to both elicitation type (single-word versus connected speech), [33] and word complexity (primarily mono- and disyllabic words versus multisyllabic). [34] Word complexity might also be relevant for characterization of PPD as *resolved*; if insufficient numbers of MSWs were tested, ongoing difficulty with timing and sequencing of both syllables and speech sounds may have been missed, at least up to the age of 7 years. [35]

Further to word complexity, production of MSWs may be a key component in evaluation of the relationships between spoken phonology and literacy. Researchers have shown relationships between MSW production, phonological awareness skills, fluent word or nonword decoding, and spelling. For example, Core (2004) [37] identified positive correlations between phonological awareness scores and Percent Consonants Correct (PCC) on a MSW naming task in 5- and 6-year-olds. Larrivee and Catts (1999) [26] observed that MSW and nonword repetition in children with severe PPD at the end of kindergarten, predicted outcomes in decoding and nonword decoding at the end of grade 1, and explained the greatest variance in decoding (including MSW *DEC*) in grade 3. [38] For ages 5 to 8;7 years, PCC of MSWs explained a larger significant unique variance in composite real and nonword decoding when included in a model with composite phonological awareness and lexical retrieval scores. [39]

In addition to such differences in characterization of PPD, diversity in terms of literacy construct and/or measurement method are relevant in evaluation of the relationship between PPD and literacy.

CHARACTERIZATION OF LITERACY AND THE INCLUDED CONSTRUCTS

In terms of literacy evaluation, the stage of acquisition is relevant. In earlier elementary school, formal literacy instruction begins and focuses chiefly on the letter names, sound-symbol correspondence and basic spelling patterns needed to decode frequent words. In later elementary school, literacy instruction places a greater emphasis on extracting meaning from text, which comprises words with decreasing frequency. In the high school years and beyond, students must decode and comprehend infrequent multimorphemic words, and comprehend increasingly abstract text in the context of less explicit literacy instruction. [40] Theories of literacy strive to account for student advancement across these stages, with word level literacy considered a foundation for all of them. [41]

Most theories assume spoken and print language to be connected through some aspect of phonological processing, particularly the representation of smaller speech units by letters. [42, 43] The commonly described *Dual Route* models suggest that reading or spelling words involves two separate cognitive procedures. [44, 45] The models aim to explain how knowledge of word sub-units (phonological awareness) enables reading of familiar versus unfamiliar words (word and nonword decoding) and their orthographic encoding (spelling). However, the constructs and evaluation of phonological awareness, decoding and spelling have also varied across studies, discussed as follows.

Phonological Awareness (PA)

Phonological awareness (PA) refers to knowledge (implicit and explicit) that words are composed of sub-units (e.g., syllable, onset, rhyme, phoneme), and to the ability to consciously manipulate these units mentally. [4, 46, 47] Studies have shown robust relationships between word level literacy and PA, [18, 48, 49] with a minimum proficiency deemed necessary for acquiring phonological to orthographic correspondences for both monosyllabic, [50] and MSW word recognition. [51]

Characterization and evaluation of PA have differed in conjunction with children's developmental level. Task characterization has varied in terms of levels of meta-cognitive awareness and working memory, language recognition versus production, and the size of phonological units. [13, 46, 52, 53] Studies have utilized standardized tests, [1, 39, 47] nonstandardized tasks, [12, 36, 53] or a combination thereof. [8, 11] Rhyme and onset matching tasks have predominated through age 6 years. For 7- to 8-year-olds, segmenting and blending have been common, sometimes of syllables and onsets but more often, phonemes. Phoneme manipulation tasks have frequently been administered from age 7 years, initially elision, and progressing to phoneme reversals at ages 10 through 13 years.

Decoding (DEC) and Fluency (FL)

In terms of word reading, Ehri (1992) [49] described the relationship between dual routes for recognizing words, i.e., *recoding* or *decoding (DEC)*, and automatic sight recognition,

fluency (FL). *DEC* is assumed to rely on intermediate application of grapheme-to-phoneme rules for translation of orthographic representations into suprasegmental structure and phonological segments, before accessing meaning. [41] As reading proficiency increases, readers learn progressively larger orthographic chunks, including syllabic patterns, with few exposures to a word. This enhances *FL*, suggesting stronger and faster cognitive connections from orthography to phonology and meaning. [49] All orthographic words may in fact connect to meaning and pronunciation concurrently, [44, 54, 55] emphasizing the foundation of accurate spoken phonology for translating print into speech. [56, 57]

Nonword Decoding (NWD)

In *nonword decoding (NWD)*, knowledge of grapheme-to-phoneme rules is required to read pseudo words, and so is largely accomplished without the contribution of meaning. [54] As children develop representations of larger chunks of orthographic patterns, however, word neighborhoods might aid in recognition of parts of nonwords. [41] In child literacy development, the importance of *NWD* has come from evidence that acquisition of phoneme-to-grapheme correspondences depends on factors beyond phonological awareness (e.g., some children have performed well on *PA* tasks but not on tasks involving phonological to orthographic correspondence). [50]

In comparison with the variety of *PA* assessments, *DEC* and *NWD* have been primarily assessed on word lists from standardized tests, [53, 58] and infrequently on nonstandardized tasks. [2, 58] Standardized tests of *DEC* have been created in several contexts: North America, [8, 14] Great Britain, [2, 31] Australia, [4] and New Zealand. [5] Uniquely, Overby et al. (2012) [7] determined the ecological validity of measures from the Templin Archive (2004) of longitudinal data from 1960-1972. Irrespective of country, the *Word Attack* subtest of the *Woodcock Reading Mastery Test* [59, 60] was the standardized measure used to evaluate *NWD*. [1, 5, 14, 24] The few studies investigating *FL* varied as to whether primary or secondary data were collected, from a small sample of word and nonword list evaluations [12] to a large database of passage reading assessments, [10] respectively.

Spelling (SP)

Turning to the final construct, *spelling (SP)* requires representation of spoken words with conventional orthography. [61] Neuroimaging studies about accuracy and reaction time for regular, irregular and nonword *SP* recognition have supported both phonological and lexical routes for spelling. [62] Because accurate, as opposed to phonologically legal spelling, must be generated, [45, 63] *SP* possibly relies on more detailed, explicit phonological to orthographic connections than reading. Ehri (1992) [49] considered such full alphabetic skill to be hierarchically organized, with automaticity gained from strong long-term memory connections between *SP* and pronunciation. Representing words in print is further taxed by demands for coordination with fine motor output, integration with morphosyntactics and, if in text versus list form, organization of ideas.

In studies of children with PPD, *SP* has been uniformly assessed using word dictation but with various measures, including recently standardized tests, [6, 36, 64] older standardized tests, [2, 4, 7, 65] and nonstandardized tasks. [1, 5, 32]

LITERACY OUTCOMES

Keeping in mind the diversity in characterization and evaluation of PPD and literacy, the following section provides an overview of literacy comparisons between children with and without PPD as background for the meta-analysis. The term PPD will pertain to any diagnosed history, whether or not considered ongoing at the point of literacy measurement. Thus, the groups studied will be stratified only by age to highlight progression with literacy.

Phonological Awareness (PA)

Studies of *PA* have compared children with typical versus protracted phonological development in the early and late elementary school years, i.e., *learning to read* and *reading to learn* phases, respectively. [40] Preschoolers with PPD (3- to 6-year-olds), have shown lags on composite score analyses, [11, 37, 46] and awareness or matching subtests at the rhyme and word initial phoneme levels, [4, 12, 53] with significance on whole word segmentation and blending. [52, 47] In late preschool, at 5 to 6 years of age, persistent PPD has had the strongest relationship with *PA* and a moderate *effect size (ES)*. [11]

At school age, studies have focused on the *learning to read* phase. Six- to eight-year-olds with PPD history have shown equivalence to children with TD on rhyme and phoneme awareness but significantly lower scores on various phoneme segmentation and blending tasks. [13, 58, 66] On the latter tasks, children up to age 9 years have scored within the average range, yet shown significant differences compared with TD children. [1] Peterson et al. (2009) [8] also found a significant difference and large *ES* on a *PA* composite for 7- to 9-year-olds; furthermore, controlling for nonverbal IQ, persistent PPD at age four years predicted ongoing *PA* difficulty.

Fewer studies have compared *PA* outcomes for older school-aged children or adolescents with PPD history versus typical development. Also uncommon are studies evaluating longer words or manipulation tasks, such as elision or substitution of segments. School-aged children with and without PPD, predominantly 8- to 11-year-olds, have performed equally well on blending and segmentation tasks but with ceiling effects. [6, 36, 38] On more advanced *PA* tasks of manipulation, such as reversed phoneme segmentation or Pig Latin, adolescents with PPD have lagged behind TD peers, irrespective of significance levels. [2, 9] However, the relationship of such tasks to literacy is unclear.

Overall, children with PPD history from preschool through adolescence appear to lag behind TD children on *PA* composites or subtests of increasing complexity. *Effect sizes* suggest moderate to large differences. Finally, PPD in early childhood is associated with lower *PA* outcomes, which in turn have predicted ongoing *PA* difficulty.

Decoding Skills: Word Decoding (DEC), Nonword Decoding (NWD) and Fluency (FL)

Outcomes for decoding skills have been reported for the *learning to read* phase, and to a lesser extent, the *reading to learn* phase. In each phase, whether or not significant, lower scores have been reported for children with PPD than for those without. In the initial phase, despite ceiling effects, 5- to 7;6-year-olds with PPD have shown significantly lower scores on *DEC* and *NWD* than TD peers. [2, 58, 67] Other studies have found average, but lower scores for children with PPD compared with those of their TD peers, with both significant, [7] and non-significant differences. [4, 23, 24]

Within wider age ranges, 6- to 9-year-olds with PPD have also had average achievement on *DEC*, [1, 8] and in comparison with children with TD, superior performance has been reported for *NWD* subsequent to PA therapy, with a large *ES*. [5] More broadly, small samples of school children aged 7 to 11 years showed significantly lower *DEC* scores, [31, 65] but using an upper limit of 13 years, *DEC* and *NWD* have been within average. [14, 68] Adolescents aged 12 to 17 years have also obtained average but consistently lower scores on *DEC* and *NWD*. [36]

A final aspect of decoding is *fluency*. For children with PPD, few studies of this construct exist, and those that do have focused mainly on the *learning to read* phase. For 5- to 6-year-olds with PPD, performance on words and nonwords has been in the average range, but significantly lower for the nonwords. [12] Meredith (2002) [6] found average word *FL* for 8- to 9-year-olds with PPD but with significant differences and large *ESs* compared with children with TD. [6] Finally, by grades 2 to 3, *FL* in connected text has been negatively correlated with persisting PPD. [8, 10]

To summarize the findings for the decoding attainment of school-age children with PPD history, average performance has been demonstrated on *DEC*, *NWD* and *FL*, although this performance may lag behind that of groups with TD. As was implied for PA, *ESs* suggest moderate to large magnitudes of difference for decoding, nonword repetition and fluency.

Spelling (SP)

More consistent results have been reported regarding *SP* proficiency, where children with history of PPD have performed significantly lower than their TD counterparts, [2, 7, 32] even during adolescence. [36, 68] A history of PPD has also predicted unique significant variance in *SP*. [1] Nonetheless, some studies have shown performance within the average range for children with history of PPD. [6, 7, 68]

MOTIVATION AND QUESTIONS FOR THE META-ANALYSIS

Assuming equivalence between children with and without PPD in other developmental domains, the overall disadvantages in word level literacy of children with PPD are important for at least two reasons: (a) decoding of longer infrequent words and comprehension of

increasingly abstract text might become more challenging, and consequently, (b) the range of available educational, career or employment choices might be narrower than for TD children.

The synopsis above suggests that overall, children with PPD history have lower literacy outcomes than their TD peers, even when their scores fall within the average range of tests normed on typically developing children. However, questions remain concerning the scale of difference for the selected word level constructs, the relative contributions of earlier versus later phases of childhood acquisition (*learning to read* versus *reading to learn*), and characterization and evaluation of PPD. A meta-analysis was thus undertaken in order to address those topics in terms of the following questions:

1. Are children with PPD consistently disadvantaged in word level literacy acquisition compared with TD peers, and if so, to what extent? Moderate to large magnitudes of difference were predicted between children with and without PPD, for each literacy construct: *Phonological Awareness*, *Decoding*, *Nonword Decoding* and *Spelling*, with the greatest group differences in *Spelling*.
2. Are there between-group differences in both the early (*learning to read*) and later (*reading to learn*) childhood phases of literacy acquisition? Between-group differences were predicted in both phases.
3. Are there differences between school-aged children with and without PPD that vary according to the characterization of PPD? The degree of protracted phonological development at time of literacy measurement was predicted to explain differences between groups whether envisioned as discrete categories of severity and sub-type, or resolution of PPD. Variation in methods used to characterize PPD, in terms of context of assessment, (i.e., MSWs and connected speech) was predicted to explain between-group differences.

METHOD

This section first briefly describes the meta-analytic objectives, and then outlines steps for the current analysis, including: search methods and study inclusion criteria, coding of moderators and reliability, data selection and transformation for *effect size (ES)* calculations, and methods for obtaining descriptive and analytic results.

Meta-Analysis Objectives

Meta-analysis provides a statistical synthesis of comprehensive research findings obtained from different study designs and/or from sub-sets of data within studies. [69, 70, 71] The included studies/data serve as the participants upon which hypotheses are tested. *Effect sizes* (the magnitude and direction of actual differences) calculated from the selected data are standardized in order to aggregate and compare them. The method involves transformations, weighting and fitting of data to a statistical equation that takes into account study influence by sample size. These processes address bias arising from the sampling of studies, and/or the populations from which samples within studies are taken. While primary investigations

explain variability in results according to dependent variables, meta-analyses examine independent variables (moderators) of interest and potentially specify gaps in research.

Study Selection

To obtain a comprehensive sample of studies of literacy outcomes for children with PPD, search terms included school age/ children/ childhood/ SSD/ speech/ articulation/ phonological/ disorders/ disabilities/ impairment / apraxia of speech/ phonological awareness/ literacy/ decoding/ word decoding/ word recognition/ fluency/ nonword decoding/ spelling/ comprehension/ reading/ dyslexia. The search for peer reviewed primary articles, conference proceedings and dissertations for any year included the main speech-language pathology, applied linguistics and education databases: Academic Search Complete, Cochrane Systematic Reviews, Communication and Mass Media Complete, CINAHL (Cumulative Index to Nursing and Allied Health Literature), Dissertation Abstracts International, Education Full Text (H.W. Wilson), Education Index Retrospective: 1929-1983 (H.W. Wilson), Education Research Complete, ERIC (Education Resource Information Center), Linguistics and Language Behavior Abstracts (LLBA), PsycARTICLES, PsycBOOKS, PsycINFO, PsycEXTRA, and Pub Med (1946-present). Subsequently, 5128 abstracts were reviewed (including duplicates in the various databases), from which 52 papers were evaluated, and their reference lists searched for additional candidates.

Inclusion Criteria

Inclusion criteria were relevant to aspects of study design, participant socio-behavioral characteristics, and available *effect size* (*ES*) data. Included studies measured at least one literacy construct of interest, in school-aged monolingual English-speaking children with PPD history (without other notable developmental conditions) and a typically developing comparison group (TD).

With respect to data availability, *ES*s (or means and standard deviations from which to calculate *ES*s) either had to be published or obtainable from authors. Thirty-four studies, reported from 1980 to 2012, met the inclusion criteria, generating 64 independent samples distributed across constructs accordingly: *PA* $n = 20$; *DEC* $n = 17$; *FL* $n = 4$; *NWD* $n = 9$; and *SP* $n = 14$. A total of 4007 children from 4 to 17 years old (1496 with PPD and 2511 with TD) was represented, with construct and corresponding sample sizes as follows: *PA* $n = 994$ ($n_{PPD} = 527$, $n_{TD} = 467$); *DEC* $n = 1717$ ($n_{PPD} = 410$, $n_{TD} = 1307$); *FL* $n = 10455$ ($n_{PPD} = 1520$, $n_{TD} = 8935$); *NWD* $n = 479$ ($n_{PPD} = 206$, $n_{TD} = 273$); and *SP* $n = 817$ ($n_{PPD} = 353$, $n_{TD} = 464$). Few age spans were as narrow as one year: an age span of 3 to 3½ years and 4½ to 5½ years was reported by 50% and 40% of studies, respectively; in one study, the range was 6½ years.

In some cases, data clarifications and adjustments were needed before *ES*s could be determined. Clarifications included: (a) establishing sample independence in Holm et al., 2008 [4] (A. Holm, personal communication, November 22, 2011); (b) verifying a reading correlation value in Overby et al., 2012 [7] (M. Overby, personal communication, February 27, 2012); and (c) obtaining unpublished data for Apel & Lawrence (2011) [1], Sutherland & Gillon (2006) [47], and Wellman et al. (2011) [14]. Catts (1991) and (1993) [23, 24] were

treated as one longitudinal study because the second study followed up on the sample of children in the first. Finally, to improve equivalence of data and reduce the number of inferential tests for *PA*, composite scores were calculated if unreported, e.g., Peterson et al., 2009. [8]

Coding of Included Studies

Coding was pertinent to the inclusion criteria and also to: publication identity, participant socio-behavioral attributes, literacy measures, and PPD characterization with consideration of co-occurring PLD. Coded socio-behavioral attributes were those used by researchers to equate comparison groups (and in some cases, tested for equivalence post hoc). [2, 11] Attributes considered were age, and one or more of the following: grade, classroom, IQ, language skills, reading/spelling level (when not a dependent literacy variable), ethnicity and SES/maternal education. Specific tests of each literacy construct were also coded.

In relation to characterization of PPD, exclusion of additional studies on the basis of potential bias arising from co-occurring PLD was also judged. The proportion of co-occurring PLD within included samples was coded for and language evaluation methods were reviewed. Whereas a small percentage of studies referred to a clinical history without PLD diagnosis, 85% directly assessed language performance across a variety of comprehension and/or production skills. In the latter case, co-occurring PLD was defined by accepted clinical criteria (1.5 SD below the mean or criterion cut-off) and/or a significant post hoc comparison between groups with and without PPD. Analysis of these methods for identifying co-occurring PLD suggested that a third of included studies (40% of those studies that directly evaluated PLD) reported no more than 25% co-occurring PLD. The coders agreed, therefore, that there was reasonable control for confounding of literacy outcomes by co-occurring PLD, and no further studies were excluded.

Following examination of co-occurring PLD, PPD was characterized in terms of status and evaluation parameters. Statuses at time of diagnosis and at literacy measurement were coded with respect to: (a) traditional severity ratings, (b) subtype frameworks such as pattern consistency or *Childhood Apraxia of Speech* (CAS), and (c) resolution or persistence. With respect to resolution, mixed groups were coded as persistent if investigators reported few children with resolved PPD (e.g., 3 of 15 in Catts, 1993 [24]; 7 of 86 in Peterson et al., 2009 [8]). Coded evaluation parameters were the specific testing methods used, elicitation type (single words, connected speech) and word complexity (mono- and disyllabic versus multisyllabic). Coding of word complexity took into account that: (a) prominent stress occurs more commonly on word-initial syllables in English disyllabic (DSW) words; (b) adult-like production of DSWs with weak (unstressed) initial syllables presents a notable challenge in childhood phonological acquisition; [27] and (c) DSWs with initial unstressed syllables and MSWs, defined as three or more syllables, are infrequent on common norm-referenced tests (occurring less than 10% of the time). [35] Consequently, a dedicated corpus of MSWs was coded whenever researchers evaluated an independent set of at least ten DSWs with initial unstressed syllables and/or MSWs (the minimum number used in the included studies). [29, 72] Tests with fewer than 10% complex words, e.g., the often-used *Goldman Fristoe Test of Articulation* (GFTA), [73] were coded for mono- and di-syllabic words; otherwise, a mixture

of mono-, di- and multi-syllabic words was coded. MSWs were not coded for connected speech elicitation, because type/token frequencies were unreported.

Reliability of Coding

Two Canadian certified and registered speech-language pathologists coded study moderators and *ES* data: (a) the first author, a doctoral student with dedicated coursework in meta-analysis and over 30 years of clinical experience, and (b) an SLP, holding a Master's degree with completed research project relating to PPD, and four years of clinical experience. Coding definitions were discussed, and when not agreed upon, the first author's coding stood. The correlation and degree of agreement for multiple coders rating multiple moderators was estimated with the *intraclass correlation (ICC)*. [74] Because both coders coded all moderators, and to allow greater generalizability to other pairs of coders, the *ICC* was tested in a fully crossed random effects design. High reliability on all study moderators was indicated, $ICC(2,1) = .976$ [CI = .974-.978]. Regarding data selection and *ES* calculation reliability, differences were discussed to achieve 100% agreement.

Determination and Analysis of *ES*s

This section outlines the methods for the next three stages of the meta-analysis, beginning with obtaining *ES*s for the selected data, followed by the descriptive and then inferential analyses. The descriptive analysis applies to the distribution and weighting of *ES*s. The inferential process includes multiple regression analyses (MRAs) for identifying significant variability in any literacy construct, and subsequent testing of that variance on the selected moderators.

Calculation of Cohen's *d*

To allow examination of the standardized magnitudes (thus independent of sample size) of actual mean differences between groups with and without PPD, *Cohen's d* was the selected *ES* for the meta-analysis. To insure independence of samples, one *ES* per literacy construct per study was chosen. For calculation of *d*, weighted means and/or pooled standard errors (i.e., proportionate to comparison group sizes) were derived from available raw scores, gains, percentiles, and standard scores. Because the value of *d* tends to be upwardly biased in small samples, by applying conversion formulas, [75] accuracy was adjusted to *unbiased d*, which was used in all subsequent analyses.

Descriptive Analysis

In the first step of the descriptive analysis, distributions of *unbiased d* were assessed through construction of funnel plots, which allow for the greater variance in small samples, reducing the number of outliers. The second step was to adjust *unbiased d* to obtain more

precise estimates of the population *ESs*, and adjust study influence relative to sample size. To obtain this *weighted d*, *unbiased d* was weighted by the inverse variance. [75] The adjustment contributed to retention of outliers, and thus, all of the data in the inferential analyses. The magnitude of *weighted d* was interpreted according to Cohen's (1988) [76] conventions (small ≥ 2 ; medium ≥ 5 ; large ≥ 8). For the *z-test* of the significance of each study *ES* and the mean for each construct, 95% *Confidence Intervals (CI)* were constructed.

Inferential Analysis

Moving to the inferential analysis, two MRAs ($p < .05$) were conducted to determine if any of the constructs had significant variance to explain by the testing of moderators. In the first regression, a fixed effects model (which assumes that all possible studies are included) analyzed *weighted ds*. However, the analyzed studies were likely estimating for different populations because of: (a) a small sample of *ESs* per construct; (b) limitations in attaining sample size power through random sampling of children with PPD; and (c) variation in parameters used to equate comparison groups. The MRA was therefore repeated on the *mixed weighted ESs* using a random effects model (which assumes that all possible studies are not included). This entailed re-weighting of the *weighted ds* by adding the *Random Effects Variance Component (REVC)*, i.e., the variability across possible populations of study samples. The additional weighting yielded a more stringent regression because the resultant 95% *Credibility Interval (CredInt)* for the *mixed weighted d* could be expected to increase (more likely to contain zero), potentially decreasing the number of significant *ESs*.

Testing of Moderators

In this last stage of the meta-analysis, for each significant literacy construct, two groups of *mixed weighted ESs* were compared on a selected moderator by a Q-ANOVA (based on *Chi-square* for categorical variables, similar to 1-way ANOVA), $p < .05$. The result indicated whether the grouping variable (moderator) accounted for significant variability and whether there was significant variability (heterogeneity) remaining to be explained by other moderators. This process of testing moderators continued until either: (a) homogeneity of variances (no additional significant variance) was reached; (b) all moderators of interest had been tested; or (c) there were insufficient *ESs* (for the current meta-analysis, $n < 3$) to allow further meaningful analysis.

To address more extraneous influences of variables commonly associated with behavioral research, representative study design moderators were distinguished from participant characteristics directly pertinent to the research questions. Study design characteristics comprised: (a) cultural context, to account for the various countries in which included studies were conducted; (b) gender balance, because of conflicting information about gender differences in phonological development, [77, 78, 79], (c) sample size, because groups with TD were frequently larger than those with PPD; and (d) literacy evaluation type, due to variation in tests used to measure a given construct.

Directly related to the research questions were the participant moderators, including mean age (within one-year intervals) and characterization of PPD at the point of literacy evaluation.

The mean age grouping variable compared early (*learning to read*) with later (*reading to learn*) childhood literacy acquisition whereas characterization of PPD encompassed: (a) resolution, i.e., groups with and without a proportion of children with resolved PPD, (b) severity/subtypes, i.e., moderate to severe, with or without mild PPD, and (c) elicitation contexts (single words versus connected speech, and word length by syllables, i.e., MSWs).

Further to severity/subtypes, those making reference to consistency (*delay*, *consistent* and *inconsistent*) were coded for infrequently. To increase available sample sizes for testing of moderators, the coders compared descriptions of these subtypes (B. Dodd, personal communication, January 7, 2013) with traditional severity ratings (*mild*, *moderate*, *severe*) and agreed to collapse: *delay* with *mild*; and *consistent* and *inconsistent*, with *moderate* to *severe* and *severe*. *Child Apraxia of Speech* was also included in the latter group. Bias was considered minimized by: (a) the small number of samples in the *mild* category coded for *delay* (*PA*, *NWD* and *SP* [$n=18$]; *DEC* [$n=19$]); and (b) grouping the *moderate to severe* and *severe* codes in any tests of moderators. Small sample sizes of groups coded with more severe or persistent PPD precluded separate analyses.

RESULTS

The *effect size* data (*Cohen's d*) were examined to address the research questions concerning word level literacy acquisition of children with PPD in comparison to peers with typically developing phonology (TD). In this regard, the descriptive analysis first outlines to what extent children with PPD are disadvantaged in word level literacy. Moderate to large magnitudes of difference were predicted for each literacy construct, with the greatest in *SP*. Findings pertaining to these predictions will be discussed by construct in the following order: *Phonological Awareness (PA)*, *Word Decoding (DEC)*, *Fluency (FL)*, *Nonword Decoding (NWD)* and *Spelling (SP)*.

In the subsequent section concerning inferential results, MRAs of *ESs* and assessment of study design moderators are presented first. Then, the research questions about literacy acquisition in children with and without PPD are addressed. Regarding stage of literacy acquisition, differences were expected in both early and later stages, with larger differences in the later stage, assuming a slower developmental trajectory in children with PPD. [10] The final question addressed potential differences according to the characterization of PPD. [36] A first prediction was that degree of PPD at time of literacy measurement would explain variation in literacy outcomes, whether defined in terms of severity and sub-type, or by resolution. Second, it was predicted that speech evaluation method would also moderate word level literacy outcomes and support the need to assess phonologically complex speech contexts (i.e., MSWs and connected speech) in school-aged children.

Descriptive Analysis Results

Relevant to the descriptive results are the visual displays of data in funnel and forest plots for the *unbiased d* and *mixed weighted ds*, respectively (see Appendices A and B). Data for four literacy constructs, *PA*, *DEC*, *NWD* and *SP*, are displayed in both plots, but because the

sample for *FL* was small ($n = 4$), only the related forest plot was constructed. The funnel plots depict the distributions of *unbiased d*, from which outliers can be visualized. The treatment of outliers was to adjust *ES* accuracy through weighting by the inverse variance, enabling retention of all data in the statistical analysis. For the *mixed weighted ds* (weighted additionally by the *REVC*), the forest plots convey the *ES* values, the 95% *Confidence Intervals* (*CI*s) of each study and of the mean *d*, with associated 95% *Credibility Intervals* (*CredInt*s). The forest plots confirmed moderate to large effect sizes between children with and without PPD on the literacy constructs, as follows: moderate for *DEC* and *NWD* and large for *PA*, *FL* and *SP*. The means for *PA*, *DEC*, *NWD* and *SP* were significant but only that for *PA* was generalizable to other populations of studies. Further details concerning these findings are reported below.

With reference to the funnel plots for *PA*, *DEC*, *NWD* and *SP* (Figure A1 to Figure A4, respectively), distributions were normalized using logarithmic lines, setting limits at three standard deviations. In the subsequent assessment of outliers, attention was given to negative values of *unbiased d*, whereby children with PPD outperformed those with TD, a less expected outcome. Negative *ES* outliers were observed in the plots for *DEC* and *NWD* only and were few, specifically: *DEC* = 2 ($n = 17$); *NWD* = 3 ($n = 9$). In the raw data for *FL* ($n = 4$), there was one negative value. However, because the weighting procedures were expected to adjust these values and all other outliers sufficiently, negative outliers were retained in the subsequent analyses. This procedure avoided selective data removal and consequent reduction of construct sample sizes.

The respective forest plots for *PA*, *DEC*, *NWD*, *SP*, and *FL* are displayed in Figure B1 to Figure B5, respectively, and are referenced below. The forest plots show the range of the *mixed weighted d* for each included study, and the *mean* for the construct, with the interval estimates of significance (95% *CI* and 95% *CredInt*). For *PA*, (see Figure B1) two study *CI*s were without significance; however, the *CI* and *CredInt* indicated a significant large mean ($d = 0.85$; range = -0.02 to 7.90). For *DEC*, (see Figure B2), five study *ds* were not significant but the *CI* suggested a significant moderate mean ($d = 0.63$; range = -1.51 to 4.99). For *NWD* (see Figure B3), three study *ds* were without significance but the *CI* was significant for the moderate mean ($d = 0.50$; range = -1.25 to 3.38). Regarding *SP*, Figure B4 showed nonsignificant *ES*s of four studies but a significant *CI* for the large mean ($d = 0.84$; range = -0.66 to 4.67). For *FL*, Figure B5 demonstrated the significant large *ES* for the study by Puranik et al. (2007) [10]; however, the mean for the construct was not significant ($d = 3.04$; range = -0.005 to -0.09).

In summary, for all literacy constructs, predictions of moderate to large differences were substantiated between the mean *mixed weighted ds* for groups with and without PPD. The largest *ES* was predicted for *SP*; however, the largest was found for *FL*, and the *ES*s for *PA* and *SP* were equivalent. In spite of the greater difficulty attributed to *NWD* than *DEC*, a moderate mean effect was obtained for both constructs. Concerning generalization, the mean *mixed weighted d* for the small *FL* sample was without significance. In contrast, the 95% *CI*s for all other constructs suggested significant means, but only the 95% *CredInt* for *PA* indicated that the *mean ES* was also generalizable to other possible populations.

Inferential Analysis Results

Results for the Multiple Regression Analysis (MRA)

Two separate MRAs were conducted to determine if there was significant variance ($p < .05$) among the *ESs* of any of the constructs to allow testing of moderators. Both a fixed effects model (which assumes that all possible studies were included), and a random effects model (which assumes that the analyzed studies were estimating for different populations) were implemented for the *weighted* and *mixed weighted ds*, respectively. A theoretical model was constructed that considered the incremental demands on phonological and orthographic knowledge, plus availability of semantic cues. This model was used to establish a hierarchical order for entering a single literacy construct at each step: *PA*, *DEC*, *FL*, *NWD* and *SP*. In the first regression, the R^2 change (*ES* for MRA) reached significance once *NWD* was entered, $F(3,60) = 6.17$, $p = .001$. The addition of *SP* also resulted in a significant model, $F(4,60) = 4.55$, $p < .003$; however, the R^2 change was not significant, indicating that only *NWD* accounted for the significance of the last two models.

In the second regression of the *mixed weighted ds*, the R^2 change for all four models was significant (see Table 1). The constant, *PA*, was also significant, $t = 5.71$, $p < .001$. Therefore, all of *PA*, *DEC*, *NWD* and *SP* had additional variance to explain for the moderator analysis. Because the sample size for *FL* was too small to make meaningful comparisons on the moderators, it was not examined further.

Table 1. Model Summary for Multiple Regression of *mixed weighted d* for the Literacy Constructs

Model	R	R ²	Adj R ²	Se	ΔR^2	ΔF	df1	df2	Sig ΔF
PA*DEC	.345	0.119	0.105	1.87	0.12	8.35	1	62	0.005
PA*DEC*FL	.475	0.226	0.2	1.77	0.11	8.44	1	61	0.005
PA*DEC*FL*NWD	.534	0.285	0.249	1.71	0.06	4.96	1	60	0.03
PA*DEC*FL*NWD*SP	.842	0.709	0.689	1.10	0.42	85.96	1	59	0

Note. PA = Phonological Awareness. DEC = Word Decoding. NWD = Nonword Decoding. FL = Fluency. SP = Spelling.

Result for the constant, PA: $t = .571$, $p < .001$.

* $p < .05$.

Results for the Testing of Moderators

The analysis next concerned the significance of the moderators on the *Q*-tests of between-groups variances for the mean *mixed weighted ds* ($p < .05$), first for study design and then participant characteristics. For each literacy construct, these results and those for the *Q*-tests of homogeneity of variances within groups ($p < .05$) are presented in detail in Appendices C to F. Although the intent was to test all literacy constructs (*PA*, *DEC*, *NWD* and *SP*) on all moderators, constructs with insufficient samples of *ESs* were excluded from the analysis.

Study design moderators were initially tested aside from the participant characteristics, in order to address selected factors known to influence developmental behavioral research: cultural range, proportion of male participants, sample size and specific literacy measures used. The subsequent sequence of testing participant characteristics concerned differences in literacy outcomes in earlier versus later childhood literacy phases, and characterization of PPD in terms of severity/sub-types or resolution, and level of speech complexity evaluated (single words versus connected speech, and MSWs).

Results for Study Characteristics

Table 2 summarizes the analyses of the study characteristic moderators. These moderators appeared to have minimal influence on the outcomes for the literacy constructs, with some exceptions for *SP*. For this construct, two moderators were significant, i.e., cultural context and measure used.

With regard to the first moderator, cultural context, included studies were primarily from the United States and England, with a limited number from New Zealand, Scotland and Canada. All constructs were tested on cultural context, with nonsignificant results, with the exception of *SP*. For this construct, there were differences between the United States and England, whether or not either country was grouped with New Zealand, Scotland and/or Canada.

The next moderator, gender ratio, was examined to ascertain whether literacy outcomes reflected proportions of girls and boys in the study. Balanced gender was defined as near 50%, but no more than 60% male, to allow latitude for the greater likelihood of protracted speech and language development in boys. The gender moderator was not significant for groups with PPD, and homogeneity was reached on one construct, *SP*.

Table 2. Study Moderators Tested and Significance across Constructs

Moderator	Groups Tested	PA	DEC	NWD	SP
Cultural Context	US vs England (with/without other ^a)	✓	✓	✓	*
Proportion Male Participants					
PPD	Near 50% to 60% vs 61 to 70%+	✓	✓	✓	✓
TD	Near 50% to 60% vs 61 to 70%+	*	✓		*
Sample Size					
ΠPPD	4 to 25 vs 30 to 98	✓	*	*	*
ΠTD	4 to 44 vs 98 to 815	*	✓	*	*
Measures of Construct ^b	Standardized & Nonstandardized	✓	✓		*
	Specific Standardized		✓		✓

Note. PA = Phonological Awareness. DEC = Word Decoding. NWD = Nonword Decoding. SP = Spelling. PPD = Protracted Phonological Development. TD = Typical Development.

^aOther = New Zealand, Scotland and/or Canada. ^bBecause NWD was typically evaluated with the Woodcock Reading Mastery Tests (WRMT; Woodcock, 1987, 1998), no test of moderator was available.

* $p < .05$.

Regarding groups with TD, gender ratio was balanced in all but one study of *NWD* ($n=9$), and so was not tested. Of the three remaining constructs (*PA*, *DEC* and *SP*), only *PA* was significant, comparing respective large and moderate *ESs* for balanced and unbalanced gender. Unexpectedly, the larger *ES* pertained to groups with smaller as opposed to larger proportions of boys. Considering the small number of *PA* studies lacking gender balance (4 of 18), gender ratio did not appear to have a substantial influence on group literacy differences in the included studies.

With respect to the third study design moderator, sample size, significant results would have confirmed the expectation that larger *ESs* are related to larger samples. In the tests of the sample size moderator, comparisons of smaller with larger groups of children (both TD and PPD), reached significance for all constructs, with two exceptions: (a) *PA*, for children with PPD, and (b) *DEC*, for the group with TD. With respect to children with PPD, across literacy constructs, the mean *weighted ds* for smaller samples ranged from small to moderate but were compared with consistently large *ESs* in larger samples, as expected. Regarding typically developing children, *ESs* were more various; in smaller samples, they ranged from small to large, and were moderate or large in larger samples. However, larger samples of children with and without PPD were related to the largest mean *ds*, as anticipated. Nevertheless, *ESs* in some small studies were possibly underestimating differences between children with and without PPD.

The last study moderator, literacy measure, was tested for differences in construct outcomes from two perspectives on standardization. The first analysis compared evaluations with and without standardization, and the second, specific standardized measures. Non-standardized evaluations were either too small (*DEC*, *SP*) or too various (*PA*) to be split further. With respect to *NWD*, a particular standardized evaluation, the *Woodcock Reading Mastery Test (WRMT)*, [59, 60] was the main test used, leaving no meaningful groupings. However, of the differences between standardized and non-standardized measures for *PA*, *DEC* and *SP*, only *SP* was significant. Large *ESs* were compared on this construct, with the largest ascribed to methods without standardization. This suggested that the types of measures might have been administered differently and/or placed different amounts of emphasis on various orthographic patterns.

Moving to differences among standardized evaluations, comparisons were available for *DEC* and *SP*, with mixed results. In terms of *DEC*, there was no significant difference between measures used within and outside of North America. Conversely, for *SP*, the result was significant between the frequently used *Test of Written Spelling (TWS)*, [90] and a remaining collection of evaluations. In sum, particular standardized tests did not account for significant variability in literacy outcomes; however, when nonstandardized *SP* measures were used, larger differences were found between children with and without PPD.

Overall, literacy outcomes between children with PPD and typical phonology were not significantly influenced by the study design parameters investigated: cultural range, gender balance, sample size or evaluation method. Exceptions to this concerned *SP*, for which differences were related to countries where studies were conducted (i.e., United States versus England), and to whether or not evaluation methods were standardized.

Results for Participant Characteristics

Turning to participant characteristics, Table 3 summarizes the results for the testing of earlier versus later childhood literacy mean ages, PPD severity and resolution, and level of

speech complexity evaluated. Moderators for literacy phase, and PPD characterization were associated with significant differences in *NWD* and *SP* outcomes, while speech complexity had a bearing on all constructs that could be tested, *PA*, *DEC* and *SP*, as outlined below.

Table 3. Participant moderators tested and significance across constructs

Moderator	Groups Tested	PA	DEC	NWD	SP
Range of Mean Age at Literacy ^a	4;0 to 6;11 vs 7;0 to 8;11	✓			
	5;0 to 7;11 vs 8;0 to 10;11		✓	*	*
Resolution	Resolved vs Unresolved	✓	✓	*	*
Severity	Mild & Moderate with/without Severe vs Moderate &/or Severe	✓	✓	*	*
Measures of PPD at Literacy					
Word Lengths	Mono- & Di-syllabic vs Multi- with/without Mono- & Di- syllabic	*	*		*
Speech Context	Single words vs Single words & Connected speech	*	✓		

Note. PA = Phonological Awareness. DEC = Word Decoding. NWD = Nonword Decoding. SP = Spelling. PPD = Protracted Phonological Development. TD = Typical Development.

^a Closest approximation to earlier and later phases of childhood literacy (Chall,1983).

*p < .05

Concerning the first participant moderator, mean age at literacy evaluation, results were significant for *NWD* and *SP* (with adolescent groups removed, e.g., Lewis and Freebairn, 1992 [36]). The test for *SP* also reached homogeneity, suggesting that there was no further variance to explain. Given the caveat of the small sample size for *NWD*, a large *ES* for children in the earlier literacy phase was compared with a negligible mean in the later phase. Negligible means were those obtained from two of the three studies of *NWD* in which children with PPD outperformed those with TD. For *SP* and *PA*, the largest *mean weighted d* was also associated with the earlier phase, but moderate *ds* for *DEC* were virtually equivalent. Notwithstanding the incongruity of negative *ESs* for *NWD*, the results indicated greater differences between children with and without PPD in the earlier phase of literacy attainment, but that the range remained moderate to large.

The next tests of moderators concerned characterization of PPD in terms of severity (combined with subtypes) and resolution. Beginning with severity, studies tended to examine ranges from mild to severe, or from moderate to severe, making tests on more discrete categories unavailable. The comparisons these two groups, however, were significant for *NWD* and *SP* but not *PA* and *DEC*. For *NWD*, the group differences were large and negligible, the latter again because of children with PPD out-performing those with TD. For *SP*, significance related to large *mean weighted ds*, in contrast to nonsignificant moderate *ESs*

for *PA* and *DEC*. An additional comparison for *PA*, i.e., traditional severity categories versus consistency subtypes, also was not significant, between large *ES*s. Therefore, *SP* appeared set apart from the remaining constructs with regard to moderation by severity category.

The third participant moderator tested, resolution of PPD (i.e., resolved or unresolved), yielded a pattern consistent with that of severity: significant for *NWD* and *SP* but without significance for *PA* and *DEC*. For *NWD* and *DEC*, the resolved group was equally split as to full or mixed resolution, but few were of mixed resolution in the tests for *PA* and *SP*. For *NWD*, mean *ES*s between groups that were unresolved and mixed as to resolution, were large and negligible, respectively. Negative *ES*s in the selected studies accounted for the negligible *ES* of the latter group. For *SP*, large *ES*s were compared, the largest in the unresolved group. Nonsignificant group *ES*s for *PA* were also large but for *DEC*, were moderate.

In summary, whether PPD was characterized in terms of traditional severity categories, consistency subtypes or resolution, results were consistently significant for *SP* and *NWD*, with larger effects in groups with the most protracted development. However, *NWD* comparisons were unique in the proportion of negative *mixed weighted ds* attributed to very small samples ($n = 3$). In contrast, moderate to large nonsignificant differences for *PA* and *DEC* were maintained between children with PPD and TD.

The last participant moderator regarding characterization of PPD was complexity of speech evaluation context. For this moderator, two tests were possible: single words versus single words combined with connected speech, and in terms of word length by syllables, monosyllabic combined with disyllabic words versus MSWs whether or not combined with mono- and disyllabic words. *PA* and *DEC* were tested with regard to connected speech evaluation, which in the studies was always supplemented with single word assessment. Results were contradictory, with significance for *PA* but not *DEC*. For *PA*, the *ES*s compared were large and moderate, and for *DEC*, both moderate. However, in both cases, the larger mean was ascribed to single word evaluation, suggesting that word complexity as opposed to connected speech, was the more relevant context to word level literacy.

Concerning word length differences, *PA*, *DEC* and *SP* were tested, and all results were significant. *PA* was the only construct for which MSW evaluation could be compared in isolation of shorter words. For this comparison, the difference between large and moderate mean *ES*s was homogeneous, suggesting that the moderator of word length accounted for all of the variance. The tests for *DEC* and *SP* compared moderate and large mean *ES*s, respectively, with the largest effects for studies that included MSW evaluation, whether or not in combination with shorter words. These results also implied that word complexity was a relevant factor in literacy differences.

In summary, the overarching findings of the tests of participant characteristic moderators were threefold. First, the mean *mixed weighted ds* for subgroups remained moderate to large between children with and without PPD on all constructs except *NWD*. This construct, with the smallest sample size, showed an anomalous association with negative *ES*s, suggesting greater caution about the related findings. Second, characterization of PPD in terms of literacy acquisition phase, or severity, as determined by traditional categories (with subtypes included) or resolution, was significant for *NWD* and *SP*, but not *PA* and *DEC*. Irrespective of significance, larger *ES*s were consistently found in groups with the most protracted phonological development. Third, for constructs tested on complexity of speech evaluation context, *PA*, *DEC* and *SP*, results were significant when MSWs were assessed, whether or not in conjunction with shorter words. A significant result for *PA* when connected speech was

combined with single word evaluation, also suggested that the evaluation of short single words alone is insufficient for characterizing the phonology of school-aged children.

DISCUSSION

A meta-analysis was conducted to evaluate contradictory findings in the literature concerning the relationship of protracted phonological development and literacy acquisition. [6, 8, 24] Clarifying the basis for such differences might inform the design of therapies for spoken phonology in the future, which in turn might enhance literacy outcomes. The meta-analysis set out to determine the convergence of evidence about the magnitude of literacy differences, and the moderating effects of central study and participant characteristics.

The meta-analysis examined two possible major sources of variation in literacy outcomes between studies: (1) evaluation of specific word level literacy constructs of *Phonological Awareness (PA)*, *Decoding (DEC)*, *Fluency (FL)*, *Nonword Decoding (NWD)* and *Spelling (SP)*, and (2) participant characteristics regarding age at literacy evaluation and/or characterization of PPD. The ensuing research questions asked whether differences: (a) were consistent across constructs; (b) varied by age in terms of the stage of childhood literacy (earlier, *learning to read*, versus later, *reading to learn*); and (c) varied depending on researchers' characterization of PPD, as defined by severity/subtype, resolution, or the complexity of speech elicitation context (i.e., word length by syllables, or single words versus connected speech). Before answering these questions about participant characteristics, it was necessary to assess whether aspects of study design also explained variance in literacy outcomes; consequently, moderators of cultural context, sample size, gender and specific literacy measures were tested.

Review of Key Methodology for the Meta-Analysis

In the next section, the methodology for the meta-analysis is reviewed as a qualifying context for the discussion of descriptive and inferential results that follows.

A descriptive analysis addressed the first question of the study: Are children with PPD consistently disadvantaged in word level literacy acquisition compared with TD peers, and if so, to what extent? Initially, *effect sizes (ESs)* for the mean differences between children with and without PPD (*unbiased Cohen's d*) were calculated for 67 independent samples identified in the 34 included studies. Distributed across the literacy constructs, sample sizes were as follows: *PA* ($n = 20$), *DEC* ($n = 17$), *FL* ($n = 4$), *NWD* ($n = 9$), and *SP* ($n = 14$). The *ESs* corresponding to all constructs were predicted to be moderate to large, with the largest expected for *SP*. Outliers were inspected visually in funnel plots. To treat the identified outliers, all *ESs* were weighted by two factors: (a) the *inverse variance*, to adjust study influence by sample size, and (b) the *Random Effects Variance Component (REVC)*, because the included studies were likely estimating for different populations of studies. Then, by constructing forest plots of the *95% Confidence Intervals (CIs)* and the *95% Credibility Intervals (Cred Ints)*, the significance and generalization of *ESs* were examined. The significance of study differences was judged in relation to the *CI* for the construct mean,

which also suggested generalization to the population for the sample of included studies. More stringently, the corresponding *Cred Ints* indicated whether the construct mean was representative of all possible populations of studies, completing the descriptive analysis.

An inferential analysis was subsequently conducted to address the primary research questions about participant characteristics. Initially, multiple regression analysis (MRA) was used to establish that there was sufficient variance among the *ESs* on any construct, to test the moderators. The conflicting literacy outcomes identified in the research suggested that all variances would be significant, predictions confirmed by the MRA ($p < .05$). This allowed the moderators of age at literacy measurement and characterization of PPD to be evaluated on the *Q* statistic (similar to *Chi-square* for categorical variables) whenever constructs had sufficient studies to group on these variables. Following from this requirement, *FL* was excluded from the moderator analyses because of its small sample size.

Before assessing the moderators for the research questions, the study design moderators were tested. Significance was considered possible for cultural context, gender, and specific literacy measures, but less likely for sample size. In terms of cultural context, potential significance related to the range of countries where studies were conducted. Second, concerning gender ratio, a major imbalance was expected to significantly bias *ES* magnitudes in favour of girls. Third, regarding specific literacy measures, moderation could arise from the psychometric rigor of standardized as opposed to non-standardized measures. Further to standardized measures, any differences were predicted to relate to cultural contexts. Finally, with respect to the wide sample size ranges across studies, and between groups with and without PPD, it was expected that the weighting of the *ESs* would be an adequate adjustment.

Following the testing of the study design characteristics, participant characteristics were evaluated in the inferential analysis. Concerning the first of these, age at literacy measurement, it was anticipated that differences between children with and without PPD would have widened by the later childhood literacy phase. Second, the various methods for defining PPD, whether in terms of severity, subtypes or resolution, were all predicted to be significant for two reasons. First, assuming the connection between spoken phonology and word level literacy, [18, 19] more protracted phonological development could reasonably be expected to slow literacy acquisition. Second, it was possible that severity, subtypes and resolution essentially described equivalent constructs of PPD. Last, regarding speech elicitation context, significance was expected because of the added length and complexity of word structure and phoneme sequences in multisyllabic words or connected speech.

Effect Size Results

The first question for the meta-analysis concerned whether differences in word-level literacy skills, between children with and without PPD were consistent. As predicted, uniformity, was demonstrated by moderate to large mean *ESs* between children with and without PPD, for all examined constructs: *PA*, *DEC*, *FL*, *NWD* and *SP*. However, in the examination of outliers, negative *ESs* were unexpectedly identified, indicating that children with PPD had outperformed their typically developing peers. This circumstance bears discussion before further considering the magnitude of the *ESs* overall.

There were two important statistical observations about negative *ESs*: (a) magnitudes were typically negligible, [24, 47] and (b) all were without significance because their

confidence intervals contained zero. The magnitudes therefore caused little impact on the mean *ES* for a given construct and were not generalizable beyond the primary study. Explanations for the negative direction might relate to several aspects of meta-analytic and primary research methodologies, depending on the construct evaluated. Concerning *PA*, for selected sub-groups with PPD, provision of *PA* intervention [47] could have enhanced performance on dependent *PA* variables. With respect to *DEC*, *FL* and *NWD*, the meta-analytic calculation of *ESs* from participants' gain on selected data often resulted in a negative value. Consideration of these data, however, showed gain from below average to average-range scores for children with PPD, but from two average range scores for children with typically developing phonology. In some studies, [2, 24, 25] both groups of children lost ground across measurement points, but children with PPD fell behind to a lesser extent. From these observations, it appeared that children with PPD had lower literacy at the outset, and as such, had less to lose.

There were also sample and construct biases in primary studies, unanalyzed in the meta-analytic process, but which may have contributed to negative *ES* findings. Sample bias was probable in terms of: (a) heterogeneous samples stemming from wide age ranges, [36, 64] and (b) children with PPD having higher performance than comparison groups on constructs highly correlated with literacy, e.g., verbal language comprehension and/or production, or nonverbal IQ. [68] Construct validity was relevant to samples that showed equivalent *DEC* and *NWD* attainment in earlier childhood literacy, but that later demonstrated moderate differences in comprehension. [14, 38]

Having considered the influence of negative *ES* outliers, the discussion next deliberates the moderate to large mean *ESs* between children with and without PPD. Such magnitudes were borne out for all constructs examined in word-level literacy; nevertheless, construct-specific magnitudes were not altogether as expected. First, the largest differences were predicted for *SP* (*mixed weighted d* = .84) because it was theoretically the most complex skill of the included constructs. However, means were also large for *PA* (*mixed weighted d* = .85) and *FL* (*mixed weighted d* = 3.04). Next, finding moderate *ESs* for both *DEC* (*mixed weighted d* = .60) and *NWD* (*mixed weighted d* = .50) was unanticipated because of suppositions that *NWD* reflects automaticity of sound-symbol relationships. Overall, the *ES* findings suggested that as a group, children with PPD could be expected to score about one standard deviation below peers with TD in *PA* and *SP*, and up to three standard deviations lower in *FL*. For *DEC* and *NWD*, performance of children with PPD appeared approximately one-half of a standard deviation below those with typically developing phonology. Because most studies accounted for SES factors and nonverbal intelligence, the *ESs* derived from the meta-analysis suggested that children with PPD were consistently underachieving in literacy. These differences apparently held *even when children classified as having mild, moderate and severe PPD were examined together (due to inability to isolate sufficient sub-samples in the included studies)*.

From a theoretical perspective, explanations for the magnitude of *ESs* found in the current meta-analysis might relate to accessing of phonological and orthographic (i.e., letters) representations. Both types of knowledge are likely utilized to varying degrees from the earliest stages of reading and spelling, [81] with reciprocal influences. [82] Other researchers who shared this perspective, [50, 83, 84, 85, 86] considered phonological representation to be a necessary but insufficient foundation for word decoding. Lehtonen (2009) [82] also argued that beginning knowledge of the relationship of phonemes to alphabetic orthography is

required for word-level literacy to emerge. Evidence of other early orthographic knowledge comes from Apel, Wolter and Masterson (2006) [87]. These researchers reported that orthographic processing explained unique variance in young children's spelling detection and written output of novel words, given only minimal exposure to their forms in print. With respect to later literacy, Duncan (2009) [41] defended the notion of ongoing development of phonological and orthographic representations needed to read and spell complex words.

In terms of *ESs* specific to the included literacy constructs, interactions between phonological and orthographic representations that are likely complex lead to relative dependencies that are not uniform. Presumably, speech production is strongly connected to phonological representations that are involved in reading and spelling. Therefore, in tasks of *PA*, primary reliance on phonological organization up until *cracking the code* of print, could account for the large difference between children with and without PPD. As the ability to decode words progresses, reciprocal contributions of the phonological and orthographic systems advance *PA* ability. However, children with history of PPD might continue to be disadvantaged. For example, children might experience confusion over less transparent sound-symbol correspondences, i.e., letters or letter patterns that are associated with more than one speech sound, and the converse, where a single speech sound relates to more than one letter pattern. In another case, children might have difficulty understanding the relationship of a base word to related morphologically complex words. [1]

Mutual dependence on phonological and orthographic representations is more probable for *DEC*, *FL*, *NWD* and *SP*, from the outset of their development. Between children with and without PPD, the large *ESs* for *FL* and *SP* could logically be precipitated by the added factor of skill automaticity. Automaticity is required for success in *FL* by definition, [10] but also is relevant to *SP*, [49] because of the overlay of writing the orthography (i.e., insofar as the evaluation methods used in the included studies). Less demand for automaticity could be attributed to the moderate *ESs* pertaining to *DEC* and *NWD*. In both of these processes, speed of connections between phonological and orthographic systems are likely determined by accessing phonological components of assorted sizes, including those related to lexical frequency and neighborhoods, e.g., onset and rime patterns. [41, 82] The lexical restructuring theory suggests that stronger connections to lexical information would facilitate accuracy of *DEC* over *NWD*, [19, 44] in the same way that vocabulary growth is proposed to create ongoing refinement of the spoken phonological system. [88, 89]

A final point of discussion about the mean *ESs* for the literacy constructs concerns generalization. The 95% *CI*s were significant for all but *FL*, suggesting that the results for *PA*, *DEC*, *NWD* and *SP* were generalizable to other samples of studies described by equivalent moderators. As noted earlier, the very small sample of studies of *FL* ($n = 4$) and the unique large database sample ($n = 10,221$) studied by Puranik et al. (2008), [10] made it difficult to draw further conclusions beyond the current included studies. However, the large *ES* calculated from the *FL* data selected for the meta-analysis predicted that *ESs* of similar magnitude could also be expected given similar database samples and *FL* measures. In terms of generalization to populations of studies described by other moderators, only the 95% *CredInt* for *PA* was significant, perhaps owing to the breadth of tasks tested that made up the composite scores. The discussion now turns to the assessment of moderators included in the current meta-analysis, first with regard to study characteristics, and then participant characteristics of direct relevance to the remaining research questions.

Study Characteristic Moderators

To explain *ES* differences between children with and without PPD, the literacy outcomes were tested for study moderator influence before addressing the participant characteristics for the main research questions. With the exception of *NWD*, all constructs were tested on cultural context, sample size, gender, and specific literacy measures. *NWD* was excluded from testing on the latter two grouping variables because there were no meaningful splits available. An overall assessment of the results for the study characteristics suggested that effects were not even. However, certain patterns surfaced, including that: (a) gender ratio was primarily not a moderator, (b) sample size was a moderator for several constructs and, (c) effects were more frequent for *SP* than for any other construct. From this general assessment, a more in-depth discussion of the study characteristics selected for the current meta-analysis will first consider cultural context and measure used because of their associations with *SP*, followed by gender and sample size effects.

Concerning *SP*, cultural context and standardization of measures were significant moderators specific to this construct. Cultural context differences were pertinent to the two countries in which the majority of studies took place, the United States and England, but appeared unrelated to differences in particular standardized evaluations. Sub-groups of specific standardized measures compared a more recently published test, the *Test of Written Spelling* (*TWS*), [80] with older publications used outside of the United States, e.g., the *Schonell Graded Word Spelling Test*, 1956, [90] and the *Graded Spelling Test*, 1977, [91] also without effect. Therefore, other explanations for cultural differences were considered with regard to spoken English dialect.

Researchers have suggested that it could be useful to confirm whether or not dialect influences skills related to word-level literacy, e.g., morphological awareness. [1] From the perspective of the included studies, differences in American and British spoken English dialects might account for the observed effect of cultural context on *SP*. That is, with regard to sonorous segments (vowels or consonants with spontaneous voicing), spelling challenges might vary because of different pronunciations represented by the same orthography. For example, using tasks of phoneme identification in CVCC and CCVC spellings, Lehtonen (2009) [82] has demonstrated the influence of sonority on *SP*. When sonorant consonants (e.g., *r* and *l*) appeared in consonant clusters in the words (e.g., *pl*, *br*, *rk*, *lk*), both child and adult speakers of American English more often chunked the consonant with the preceding or following vowel. How speakers of American and British English might treat the same contexts would be of interest, because the dialects contrast as to whether spelled sonorant consonants are pronounced, e.g., *r* or syllabic *l*, in words such as *water* or *bottle*, respectively. School instructional practices in *SP* might also vary accordingly.

Another study characteristic concerning *SP* was the significant effect of non-standardized evaluations, which differed from traditional standard tests that have basal and ceiling effects. For example, Nathan et al. (2004) [32] analyzed the results of British Statutory Assessment Tests that evaluated the spelling of 30 words not normally used in the children's written compositions. Words included both monosyllables and MSWs with and without regular orthographic patterns. Based on whole word scores, children were assigned to one of three academic attainment levels expected for grade in school. However, some studies used methods other than whole word scoring, accounting for spelling of smaller word elements. Snowling and Stackhouse (1983) [31] asked four children identified with *Childhood Apraxia*

of Speech to spell 52 familiar CVC words comprised of stop and nasal consonants (i.e., *m*, *b*, *p*, *t*, *d*, *n*, *g* and *k*). Consonant spelling was studied in relation to change across three places of articulation; therefore, vowel spelling was not considered. Apel and Lawrence (2011) [1] scored phonemes and morphemes on a 15-word dictation test. In the latter two studies, relatively large samples of children with and without PPD were examined (i.e., $n = 74$ and $n = 88$, respectively), with significant *ESs*. For the group of studies, the significant difference was between large *mean ESs*, but was larger when non-standardized measurement was used. Rather than applying basals and ceilings, it appeared preferable to have children spell a representative sample of word structure and orthographic components [1], thereby gaining a more specific analysis of spelling abilities.

The study characteristic concerning gender ratio, was tested independently in groups with and without PPD for *PA*, *DEC* and *SP*, and for *NWD*, in the group with PPD. Gender ratio in the group with TD was a moderator for *PA*, but was without significance in any of the other tests. Normative information about childhood phoneme acquisition has sometimes suggested gender differences, [79] but whenever reported, has favoured girls. [91] Therefore, in relation to children with PPD, an effect due to higher male proportions in the group with TD would predictably reduce *ES* differences, a prediction upheld for *PA*. However, other available normative data that have not indicated gender distinctions, [77, 78] were aligned with the nonsignificance of gender ratio in the studies overall.

Sample size was also independently evaluated in groups with and without PPD for all constructs. Sample sizes were often between non-equivalent groups, the largest mainly ascribed to children with TD, [7, 39, 67] because recruiting large samples of participants with PPD is frequently difficult. In the tests of the sample size moderator, only two tests were not significant: children with PPD in studies of *PA*, and those with TD in studies of *DEC*. In the significant comparisons, the largest *mean ES* was attributed to the group of studies with larger samples. Therefore, it is possible that *ESs* were underestimated in the studies with smaller samples of either group of children.

Participant Characteristic Moderators

The discussion moves on to the moderators of central interest in the current meta-analysis, the participant characteristics. These were defined in terms of phase at literacy evaluation, i.e., early (*learning to read*) and later childhood (*reading to learn*), plus parameters characterizing PPD, i.e., severity/sub-types, resolution and complexity of speech context evaluated. In the following section, the results for the tests of each moderator will be discussed in turn and conclude with the support they lend to theoretical views about the course of literacy acquisition for children with PPD.

Regarding age range or phase of literacy development, synopses in the literature offered mixed conclusions about whether there are persistent differences in the literacy of children with and without PPD. [1, 8, 10, 11, 36] The current meta-analysis suggested ongoing large or moderate differences in *PA*, *DEC* and *SP*, but not in *NWD*. Also relevant to these differences was whether magnitudes were smaller in the later childhood phase, and any variation in results among the constructs. For *PA* and *DEC*, moderate differences were maintained but in *SP*, differences declined from large to moderate in the later age groups. The *ES* for *NWD* also decreased, from large to negligible, an unexpected finding given that

performance of this skill theoretically is highly dependent on the phonological to orthographic relationships of literacy. This unique outcome for *NWD* in the later childhood literacy phase must be considered with caution however. Specifically, the *mean mixed weighted d* was obtained from small samples of children ($n = 100$) and studies ($n = 3$), and in two of these, children with PPD outperformed those with TD. Nevertheless, if the difference in *NWD* between children with and without PPD does close by the later phase of childhood literacy, the gain might in turn explain the magnitudes of difference for the other literacy constructs. Researchers have been of the opinion that proficient *NWD* will enable fluent word decoding, [10] and spelling, [49] with reciprocal effects on phonological awareness. [1] Stronger phoneme-to-grapheme correspondences demonstrated in *NWD* should in turn spill over to *SP*. [41] Thus, *SP* proficiency might align with *PA* and *DEC* abilities, as was the case in the current tests of the moderator (i.e., all three constructs with moderate *ESs* in the later phase of childhood literacy). Facility with *NWD* might also have been sufficient to prevent *PA* and *DEC* differences from increasing, enabling some children with PPD to attain word-level literacy in the average range.

Characterization of PPD was also determined to be relevant. The first characteristic examined was the children's status in terms of resolution of PPD. Coding on this parameter generated studies of children whose PPD was unresolved, resolved or mixed (a combination of both). In order to avoid confounding the group of studies of unresolved PPD, studies of mixed samples were added to those that examined children with resolved PPD exclusively. This strategy potentially reduced the *ES* for the group mixed as to resolution of PPD. However, for each literacy construct, the proportion of resolved PPD in the sub-group was always greater (range = 0.67 to 0.80), with relative increases in the mean *ES*. This circumstance helped to minimize the confound.

The tests of the resolution moderator resembled those for age range in two respects: (a) the magnitudes of the sub-group mean *ESs*, and (b) the significance of results. For *PA* and *SP*, the mean *ESs* were large, and for *DEC* were moderate, whereas large and negligible *ESs* were tested for *NWD*. Results were significant for *SP* and *NWD*, but not for *PA* and *DEC*. Whether or not significant, differences between children with PPD and TD were not confined to groups of children with solely unresolved PPD. The results for *NWD* were again exceptional, suggesting that children with resolved PPD history did not differ from children with TD. However, as described above, the small sample of studies of *NWD*, including those in which children with PPD outperformed those with TD, suggested caution in interpreting this outcome.

The differing results among the literacy constructs on the tests of resolution were possibly related to the numerous methods that determined status of PPD, used singly and in combinations. Frequently, percent consonants and/or vowels correct (PCC/PVC) were determined for published elicited single word tests or conversational samples. Criterion-referenced cut-offs were established for these measures in terms of percentile rank, standard score, number of phonological processes, or percentage of whole word production inconsistency. Puranik et al. (2008) [10] also described various Florida Department of Education therapy eligibility criteria that referred to either: number and years of delayed consonants in relation to normative acquisition data, intelligibility judgment, disordered error patterns, or rating of moderate to severe impairment on an articulation rating scale. Nevertheless, the similarity of results for the tests of resolution compared with age at literacy measurement, suggested that both moderators indexed growth in phonology and literacy.

Puranik et al. (2008) [10] presented such a trajectory for children with PPD in terms of *FL*, from Grade 1 through Grade 3, with marginal differences indicated between children with persistent as opposed to resolved PPD.

Severity or sub-type categories relative to characterization of PPD were tested in two ways: by comparing traditional severity categories with inconsistency sub-types, and by comparing rankings within severity categories. Sufficient studies existed for testing the inconsistency subtypes only for *PA*, with nonsignificant results. Although limited to *PA*, this outcome supported the validity of combining the subtypes with the traditional severity categories, affording a larger sample size for the second comparison. Within severity categories, tests of moderate to severe and mild PPD were conducted. The magnitudes of subgroup *ESs* for each construct replicated those used in the tests of mean age and resolution, in addition to iterating the patterns of significance, i.e., significant results for *NWD* and *SP* but nonsignificant for *PA* and *DEC*. For all literacy constructs, the analogous results for resolution and severity/subtype categories suggested that the moderators defined equivalent constructs of PPD, and represented the course of the children's phonological development. For some children not identified with PPD until the early phase in which literacy was also evaluated, severity/subtype and resolution coincided. Where children were identified prior to the later phase in which literacy was measured, severity/subtype and resolution measured status of PPD at different points on the continuum.

Specific evaluation methods were also relevant to characterization of PPD. The results of the meta-analysis suggested that a more useful option for understanding the relationships between PPD and literacy was to use continuous rather than categorical levels of measurement, as argued by Peterson et al. (2008). [8] In the current meta-analysis, the appropriate complexity of speech context for obtaining such levels of measurement was tested in terms of evaluation of connected speech and of multisyllabic words in the phonological assessments. Researchers have contended that proficiency of spoken MSWs is relevant to whether PPD is resolved, and in turn, to literacy outcomes, and so MSW evaluation was predicted to be a significant moderator. [3, 9, 36, 37, 47, 53, 58] In comparison with mono- and disyllabic single word elicitation, the additional complexity of spoken phonology in connected speech was also expected to significantly moderate literacy differences. The only construct that could not be tested on the speech complexity moderators was *NWD*, but comparisons on the remaining constructs suggested that context made a difference. Specifically, on the moderator of word length, results were significant for *PA*, *DEC* and *SP* and the connected speech moderator was also significant for *PA*. The significance of these moderators, which differed from the outcomes of resolution and severity/sub-types, might concern sampling of children in the various studies. Children whose phonology had not been assessed in more complex phonological contexts might have been assigned to categories of resolved or less severe PPD, or possibly excluded from studies altogether.

Further to evaluation of word length, MSWs was an important factor, with significant effects on all of the tested constructs, *PA*, *DEC* and *SP*. Results were significant when evaluation of mono- and disyllabic words was compared with assessment of MSWs with or without mono- and disyllabic words. These findings suggested that the addition of MSWs provided supplemental information about the children's phonological development. For *PA*, the effect of MSW evaluation was further highlighted when studies that had amalgamated mono-, di- and multisyllabic words were removed, resulting in a significant homogeneous comparison of mono- and di-syllables with MSWs. Regarding *ES* magnitudes, the studies that

evaluated MSWs showed a large difference between children with and without PPD, whereas the difference was moderate for studies that assessed principally mono- and di-syllables. With respect to *DEC*, moderate *ESs* were tested and for *SP*, *ESs* were large, as opposed to moderate, when more MSWs were evaluated.

The final examination of speech context compared studies that only evaluated single words versus those that combined single words with connected speech. This was considered a valid comparison because assessment of phonology in connected speech generally entails also examining single word elicitations. [34] Of the literacy constructs, only *PA* and *DEC* could be tested on the moderator of connected speech assessment, with *PA* significant and *DEC* not. Concerning *PA*, the magnitudes of the *ESs* in the significant comparison for single words were larger than were tested in the combination of single words and connected speech. In contrast to predictions, this finding suggested that the general structure of words in connected speech might have been simpler than that of elicitation corpora. This is consistent with Shriberg and Morrison (1992), [33] who reported that in comparison with word-elicitation tests, words in conversational samples were simpler in structure, and included a relatively lower proportion of multisyllabic words.

In summary, for the participant characteristics, three patterns were identified. First, *NWD* and *SP* were moderated by all of the participant characteristics, whereas only the evaluation method for PPD had effects on *PA* and *DEC*. These results support suggestions that *NWD* and *SP* are more sensitive to the strength of, or access to underlying phonological representations, possibly because of heavier reliance on systematic connections between phonological and orthographic representations. [49, 55] A second pattern was the significance of PPD assessment methods for all constructs tested, i.e., *PA*, *DEC* and *SP*. Phonological evaluation methods appear to be a crucial variable for differentiating literacy performance of children with and without PPD, and are relevant to a continuous scale of measurement, [8] as opposed to categorization by severity/sub-type or resolution. The third pattern concerned specific contexts of phonological assessment, particularly MSW evaluation. Studies that included these complex phonological contexts during assessment, showed more systematic relationships with literacy acquisition. This has clinical implications, as discussed below in the conclusions.

Theoretical Views about Lower Literacy in Children with PPD

Both uni- and multi-dimensional interpretations have appeared in the literature to explain the relationship of PPD and lower literacy skills. Uni-dimensional explanations refer either to an underlying cognitive process or to the developmental timeline of child phonology. A cognitive view is that a *core phonological deficit* contributes to poor phonological representations that slow down the acquisition of literacy skills. [85] In terms of the pace of phonological development, supporters of *the critical age hypothesis*, [32] suggest that the impact of PPD on literacy is mitigated significantly by resolution prior to formal literacy instruction. Other recent perspectives have favored the interaction of multiple components in word-level literacy, in terms of: (a) multiple linguistic and nonverbal cognitive deficits, [8, 11] (b) synergies between language-based skills, [36] and (c) overlaps of multiple levels of linguistic awareness, including phonemic, morpho-syntactic and orthographic components. [1, 5] Because the moderating effects of the participant characteristics were various, the

current meta-analysis substantiates a version of multiple component interaction for explaining the relationship between PPD and word-level literacy acquisition. To the contrary, consistently significant moderating effects on all of the literacy constructs would have supported a core deficit in phonological representations in children with PPD. Alternatively, no effects in the later literacy phase, nor in terms of reduced severity or resolution, would have defended a critical age by which phonology must be *normalized*. Conceptions about the interaction of multiple linguistic components are more convincing in terms of both current language processing models, [92] and nonlinear linguistic theories of spoken phonology. [27] These explanations were also more consistent with the significant effects of speech production context, particularly with regard to the complexity of MSWs.

CONCLUSION

The current meta-analysis was the first to systematically examine the relationship of PPD and literacy. Moderate to large differences were found between children with and without PPD on all of the word level literacy constructs, and were larger in the earlier than in the later childhood literacy phase. Cultural context (United States versus England) was a moderator of *SP*, likely as a result of differences in English dialect. Among the moderators characterizing PPD, all were significant for *NWD* and *SP*, whereas only evaluation method had effects on *PA* and *DEC*. The assessment of phonology in complex linguistic contexts moderated all literacy constructs tested (*PA*, *DEC* and *SP*), mainly regarding evaluation of MSWs, but assessment of phonology in connected speech was also significant for *PA*.

The meta-analysis was limited by the restricted number of studies that could be included, and the small samples generated for each of the literacy constructs (*PA*, *DEC*, *FL*, *NWD* and *SP*), especially for *FL* and *NWD*. Fewer than 25 samples were identified for any of the examined constructs, and fewer than 10 for *NWD* and *FL*. The findings for *PA* were likely the most robust because of the larger sample of studies. The large differences for *FL* between children with and without PPD were not significant, and the small number of studies excluded this construct from the moderator analyses. However, differences for other constructs were significant, and hence generalizable to the population of the included studies (large differences for *PA* and *SP*, and moderate differences for *DEC* and *NWD*). The differences for *PA*, *NWD* and *SP* were also generalizable to other possible populations of studies. In the future, additional studies of all chosen literacy constructs are needed, particularly of *NWD* and *FL*. More studies could enhance generalizability of findings through a replication of the meta-analysis that evaluates all constructs on all chosen moderators.

Another limitation relative to the restricted set of studies was the number of moderators tested, done in order to reduce the possibility of Type I errors in the significant *Q*-tests. Testing additional moderators in the future might help account for the heterogeneity within sub-groups, particularly because few tests of the moderators had a homogeneous result. Homogeneity was limited to mean age at literacy evaluation for *PA*, and for *SP*, gender in the PPD group, and characterization of PPD in terms of word length. Because it is difficult to isolate generally protracted language development in the characterization of PPD, in future research, evaluating language development as a moderator could inform the relative effects of language and phonology on literacy [8, 36]. Testing narrower age ranges may uncover more

incremental differences in literacy acquisition. For example, for *FL*, Puranik et al. (2008) [10] showed developmental trajectories in age levels from one school grade to another, using growth curve modelling.

Methodologies in the studies included also limit the impact of the meta-analysis. There were, overall, relatively low numbers of children with PPD in the selected studies. Researchers have commonly commented on the challenge of acquiring large enough samples with power to detect differences between children with and without PPD. Within the included studies, two-thirds sampled fewer than 25 children in either of the comparison groups and in the remaining one-third, rarely more than 100 children comprised either group. To address the issue of sample size, investigators have recently turned to secondary data from databases, for retrospective study designs. [7, 10] To design larger prospective studies, primary data might also be retrieved (e.g., from CHILDES). [93] A caution about these alternate methodologies is the inability to ensure equivalence of procedures for selecting participants and gathering data. Therefore, comparing findings from database samples to those in primary studies would be a valuable future endeavour.

Another issue regarding sampling methodology in the selected studies concerns participant characteristics. For the current meta-analysis, studies had insufficient groups of children with moderate to severe PPD, confirming that more studies are needed concerning the literacy of these children. [30] To increase the validity of categorical characterization of PPD and the ability to compare research results, researchers may need to standardize the evaluations and criteria for sub-group assignment. Alternatively, according to researchers such as Peterson et al. (2009), [8] relationships between PPD and literacy could be evaluated on a continuous scale. In this way, power can also be addressed, while avoiding semantic confusion of category labels and the arbitrary nature of participant assignment. Continuous scales could be incorporated in longitudinal designs to better follow the course of PPD and draw conclusions about the strength and direction of the relationships to literacy. Longitudinal designs might further include children with history of PPD whose early childhood literacy seems satisfactory, but whose later literacy is compromised in some way, especially in reading comprehension and written composition. [94]

Another important consideration for evaluating PPD status in future studies, also relevant to clinical practice, is the assessment of competence in complex linguistic contexts, the next topic of discussion. Evaluation of linguistic complexity pertains not only to phonological production in connected speech, [8, 12] but also in multisyllabic words. [35, 36, 38] However, there is no theoretically sound norm-referenced multisyllabic word evaluation method that is easily replicable for single word and connected speech elicitation. In research, words tested have varied, [9, 37, 53] and in some cases, variability of whole word production has been evaluated. [47, 58] Creation of a valid MSW corpus necessarily will entail inclusion of representative word structure and consonant sequences, consideration of word familiarity in terms of cultural and academic contexts, and imageability.

The connection between spoken MSW production and literacy demonstrated by the meta-analysis is of clinical relevance in terms of planning intervention for children with PPD. Researchers in literacy have stressed the need for ongoing elaboration of the underlying structure that supports reading and spelling more complex words. [41] This implies that information gained from parallel evaluations of speaking, phonological awareness, reading and writing of MSWs might allow speech-language pathologists to better tailor therapy programs. For example, beyond whole word scoring, more detailed rubrics have been applied

to children's spellings, in order to account for the phonological components of words that have not been represented orthographically. [64] Even without benefit of comparable measures for other word-level literacy constructs (i.e., *PA*, *DEC*, *FL*, and *NWD*), MSWs selected for speech therapy could also be practiced in meaningful word-level literacy to reinforce connections between phonological, orthographic and semantic components.

A final clinical implication of the meta-analysis is the additional support for early intervention. Larger differences between children with and without PPD were observed in the early childhood as opposed to later childhood literacy phase. Potentially, earlier therapy that contributes to progress in the first phase would catalyze further reduction of later differences. Increases in children's performance in *PA* to average or better levels following early intervention, [5] suggest that similar effects are possible for other word-level literacy constructs.

The studies examined here enabled the current meta-analysis by contributing a body of data concerning the relationship of PPD to word-level literacy. The meta-analysis confirmed that children with PPD are at risk for literacy development. The findings underline the importance of evaluating PPD in complex linguistic contexts, in order not to miss children who appear to have mastered the basics of spoken phonology but continue to be challenged by greater complexity. Future meta-analyses of larger samples of studies are needed that relate literacy attainment to PPD measured on a continuous metric, and that also examine outcomes of different phonological and literacy interventions in the preschool and early school years.

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**APPENDIX A: FUNNEL PLOTS OF LITERACY CONSTRUCT
EFFECT SIZES (UNBIASED *d*)**

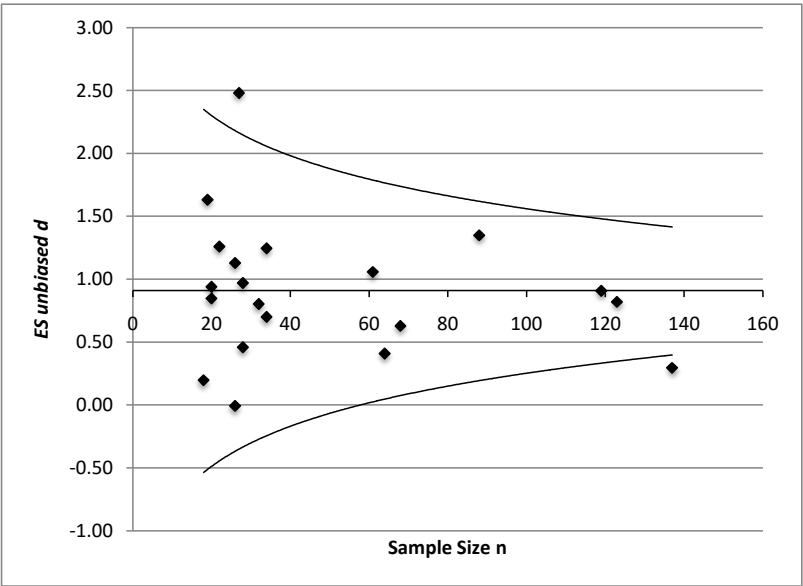


Figure A1. Funnel Plot of *unbiased d* for Phonological Awareness Composites. N = 20.

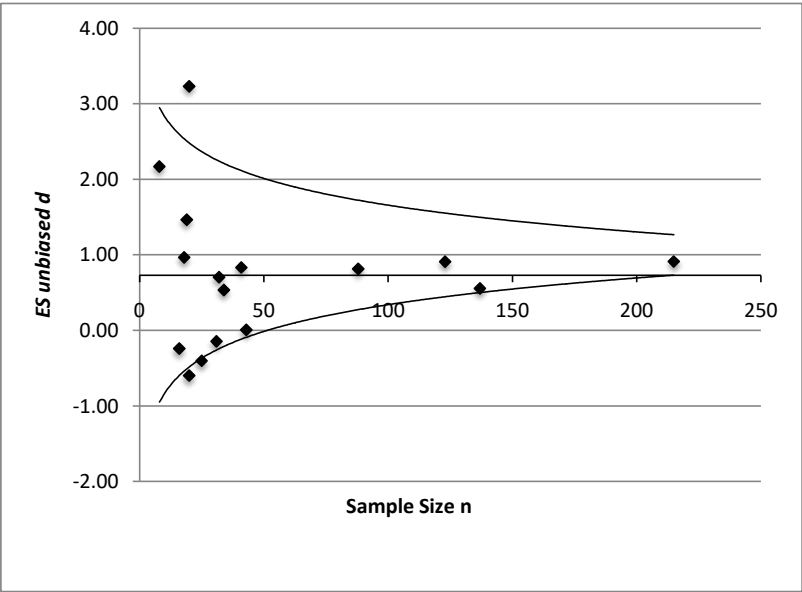


Figure A2. Funnel Plot of *unbiased d* for Word Decoding. N = 17. Outlier, *n* = 847; ES = .6704, excluded to expand clustering of smaller *n*'s at bottom of funnel.

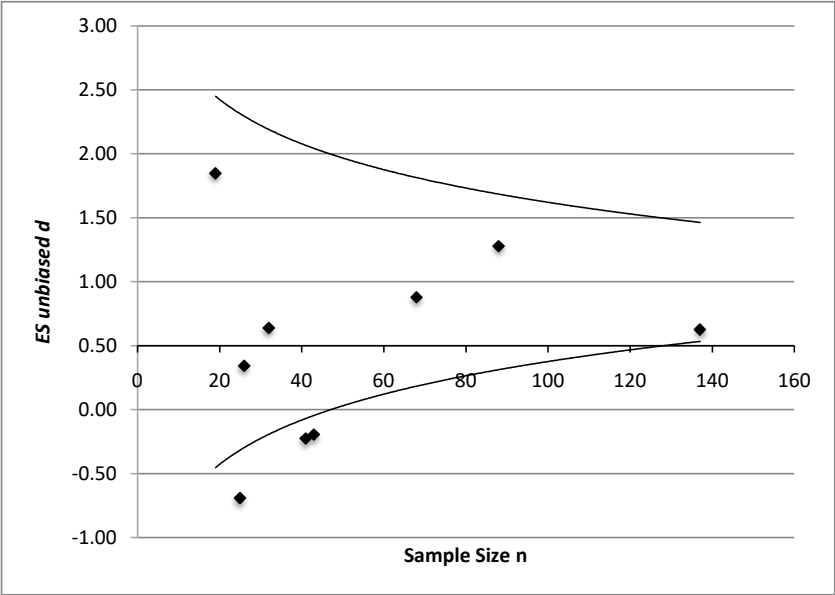


Figure A3. Funnel Plot of *unbiased d* for Nonword Decoding. N = 9.

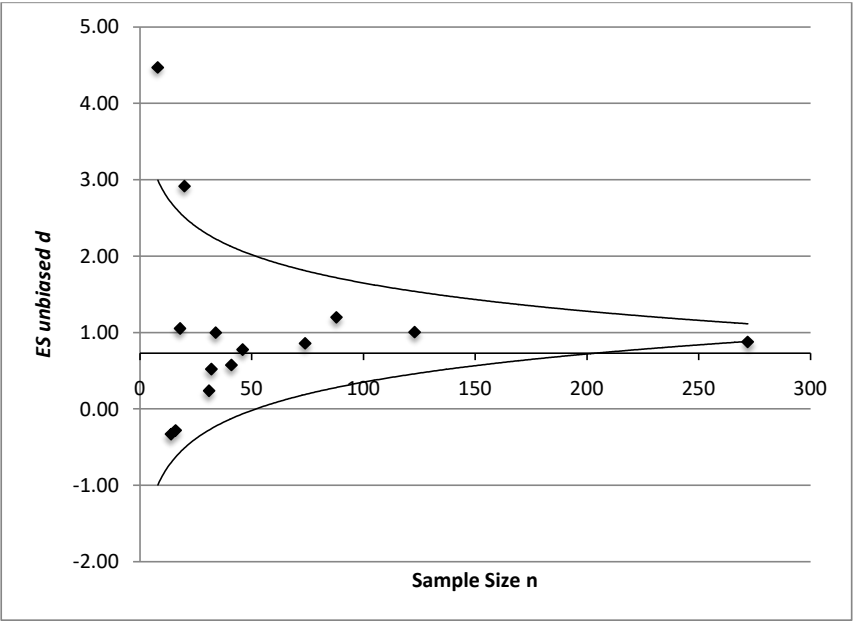


Figure A4. Funnel Plot of *unbiased d* for Spelling. N = 14.

APPENDIX B: FOREST PLOTS OF LITERACY CONSTRUCT *MIXED WEIGHTED EFFECT SIZES ($d_r^{\wedge}$)*

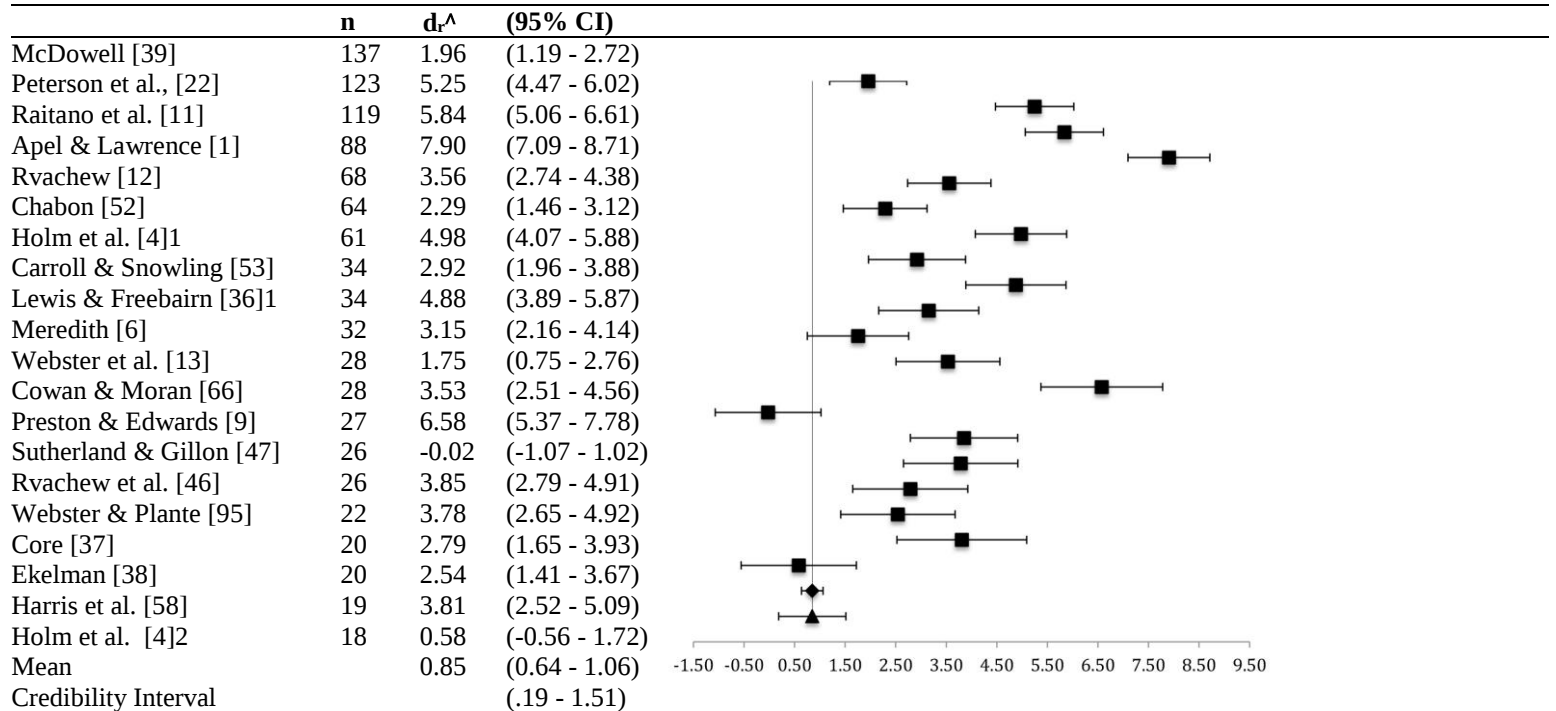


Figure B1. Forest Plot of $d_r^{\wedge}$ for Phonological Awareness. Random effects model. $d_r^{\wedge}$ is unbiased d weighted by the inverse variance and the Random Effects Variance Component (REVC).

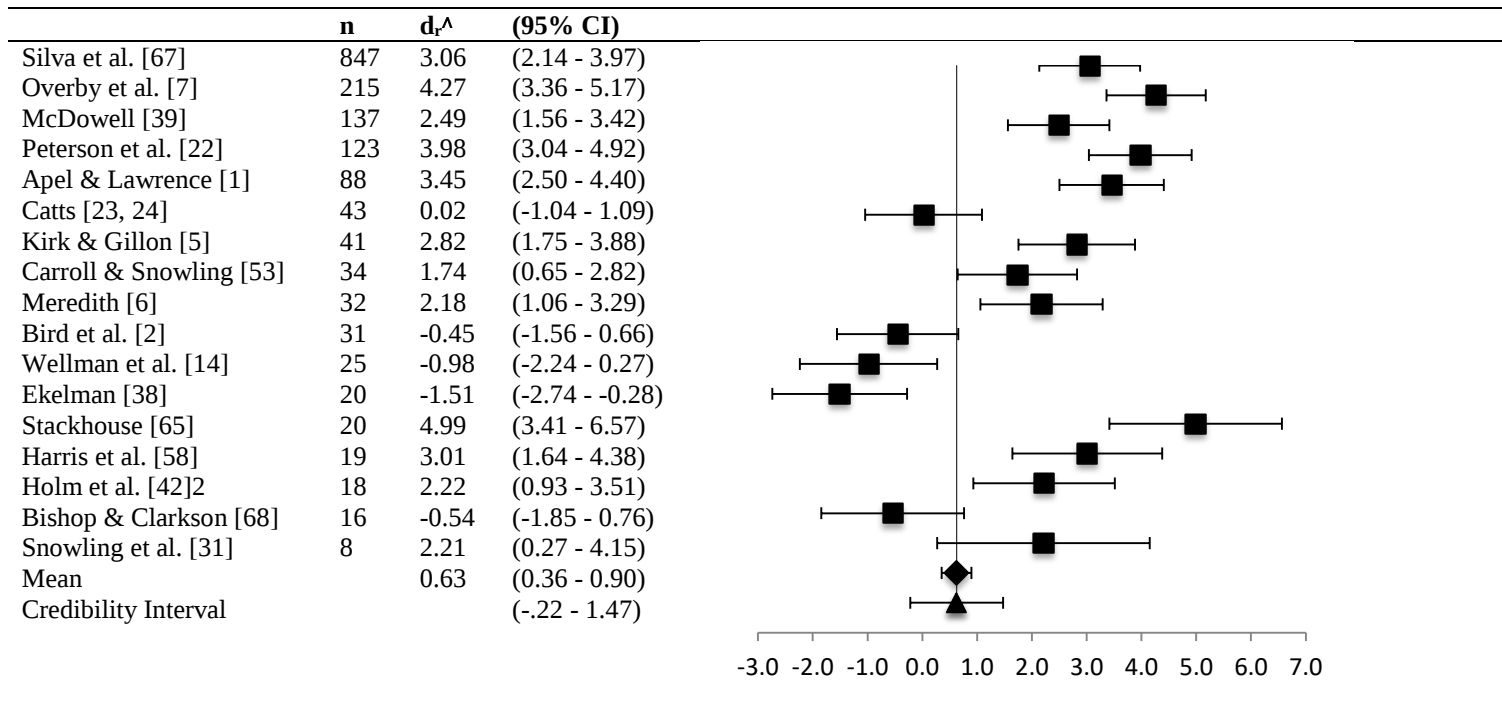


Figure B2. Forest Plot of d_r^w for Word Decoding. Random effects model. d_r^w is *unbiased d* weighted by the inverse variance and the *Random Effects Variance Component (REVC)*.

Appendix B: (Continued)

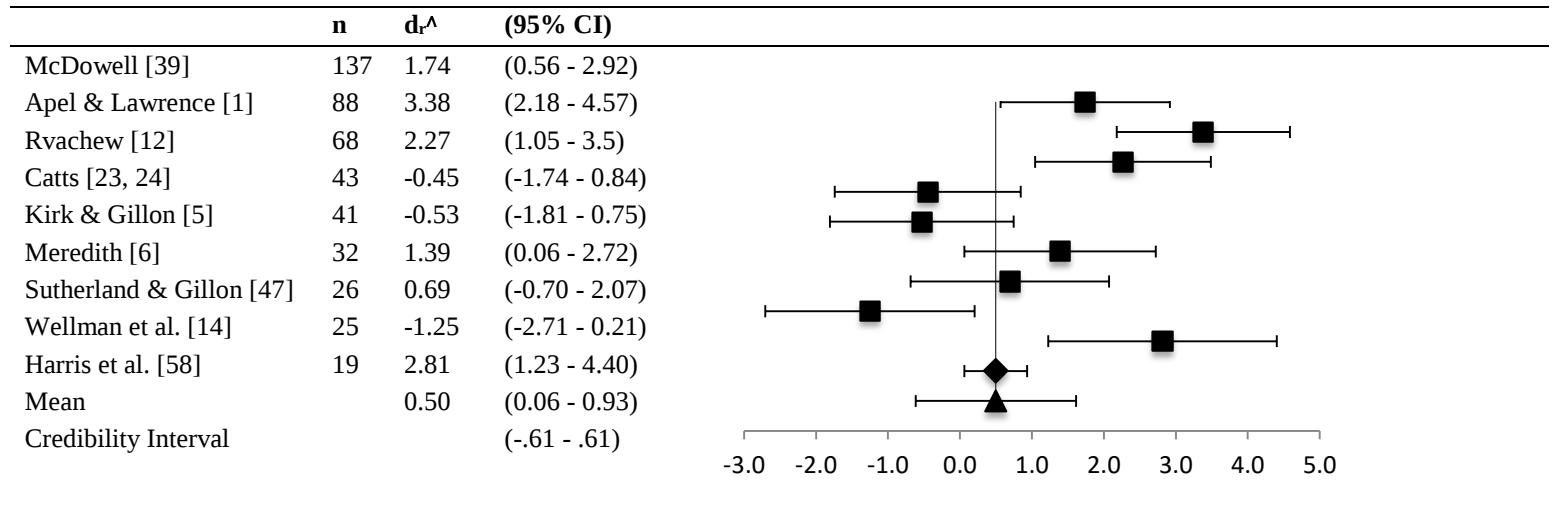


Figure B3. Forest Plot of $d_r^{\wedge}$ for Nonword Decoding. Random effects model. $d_r^{\wedge}$ is unbiased d weighted by the inverse variance and the Random Effects Variance Component (REVC).

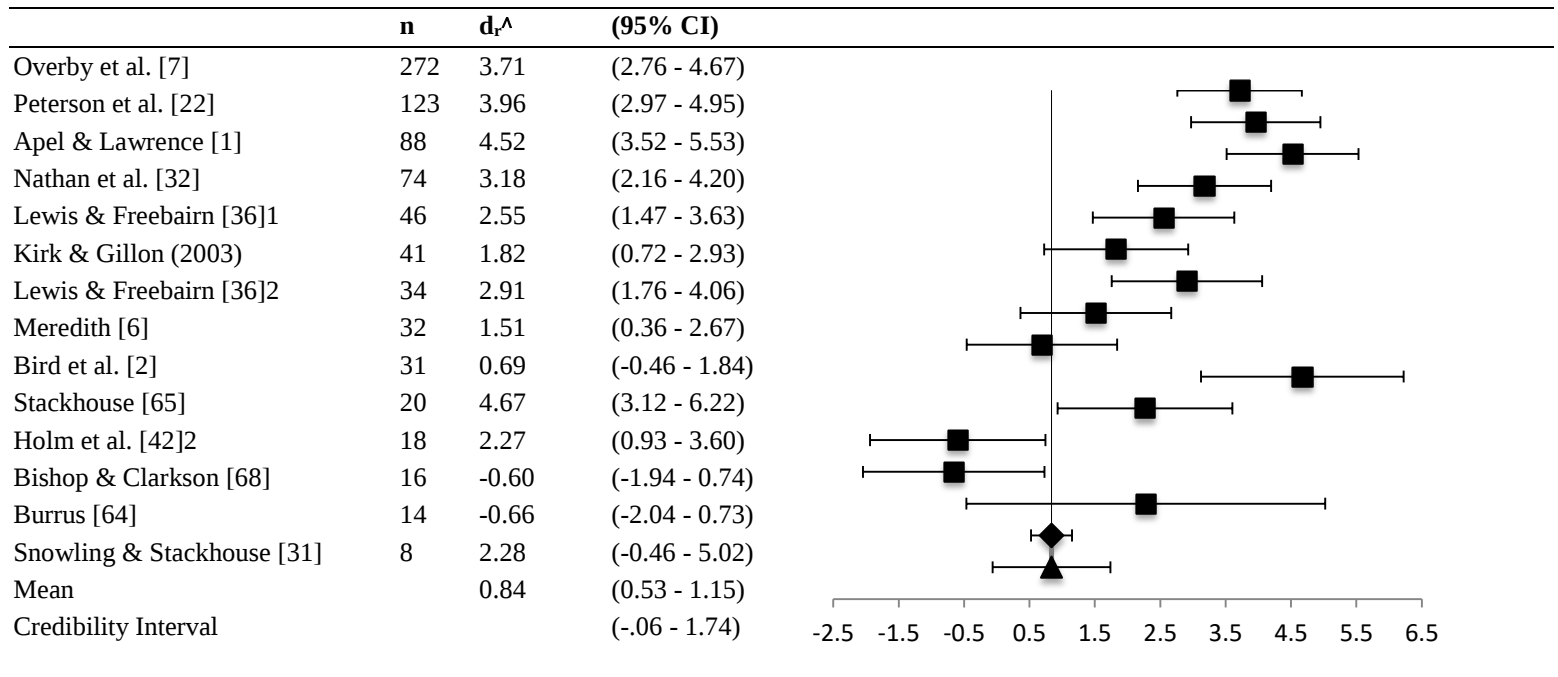


Figure B4. Forest Plot of $d_r^{\wedge}$ for Spelling. Random effects model; $d_r^{\wedge}$ is *unbiased d* weighted by the inverse variance and the *Random Effects Variance Component (REVC)*.

Appendix B: (Continued)

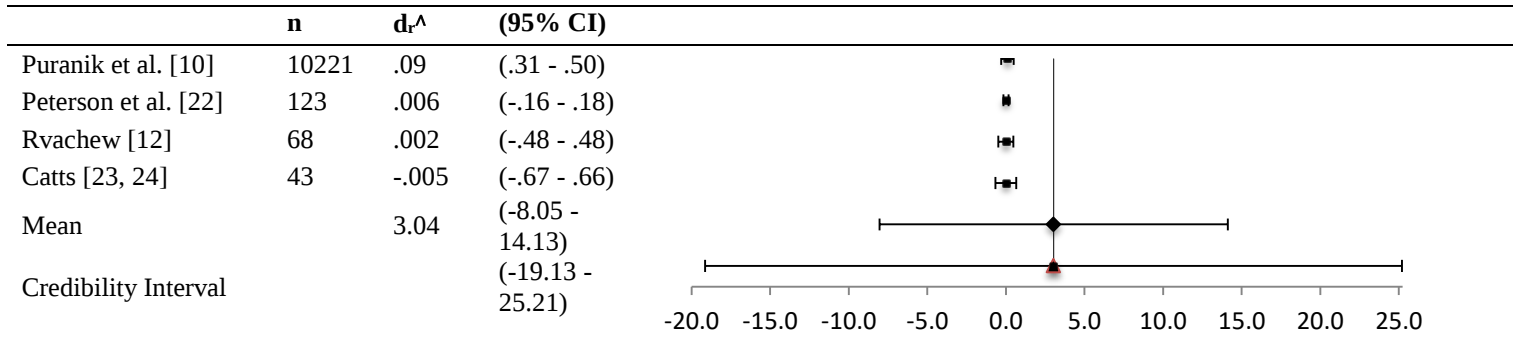


Figure B5. Forest Plot $d_r^{\wedge}$ for Fluency. Random effects model; $d_r^{\wedge}$ is unbiased d weighted by the inverse variance and the *Random Effects Variance Component (REVC)*.

APPENDIX C: RESULTS OF TESTS OF MODERATORS FOR PHONOLOGICAL AWARENESS (N = 20)

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Test for HOV	Q between Groups	Q within Groups
Cultural Context	US vs England and Other ^a	0.83 vs 0.73	13 7	Q(19) = 41.12*	2.67	Q(18) = 38.45*
Proportion Male Participants						
PPD	Near 50% to 60% vs 61% to 70%+	0.78 vs 0.90	9 9	Q(17) = 39.96*	3.14	Q(16) = 36.82*
TD	Near 50% to 60% vs 61% to 70%+	0.87 vs 0.45	14 4	Q(17) = 40.51*	5.85*	Q(16) = 34.67*

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Q for HOV	Q between Groups	Q within Groups
Sample Size						
N_{PPD}	9 to 19 vs 32 to 86	0.91 vs 0.75	13 7	Q(19) = 41.12*	3.45	Q(18) = 37.67*
n_{TD}	6 to 17 vs 32 to 98	0.92 vs 0.72	14 6	Q(19) = 41.12*	4.31*	Q(18) = 36.81*
Measures						
Standardized & Nonstandardized	CTOPP, PAT-2, PIPA vs Nonstandardized	0.78 vs 0.84	10 10	Q(19) = 41.12*	2.48	Q(18) = 38.64*
Participant Characteristics						
Mean Age Range at Literacy ^b	4;0 to 6;11 vs 7;0 to 8;11	0.754 0.751	14 4	Q(17) = 26.66*	.41	Q(16) = 26.25
Resolution	Unresolved vs Resolved with/without Unresolved	0.77 0.83	14 5	Q(18) = 41.12*	2.72	Q(17) = 38.39*
Severity	Mild, Moderate with/without Severe vs Delay, Consistent &/or Inconsistent	0.77 0.95	15 3	Q(17) = 39.59*	2.72	Q(16) = 39.86*
Complexity of Speech Evaluation						
Word Length	Mono- and disyllabic vs Multi-syllabic with/without mono- and disyllabic	0.84 0.77	7 10	Q(16) = 40.97*	3.22	Q(15) = 37.74

Appendix C: (Continued)

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Q for HOV	Q between Groups	Q within Groups
Complexity of Speech Evaluation						
	Mono- and disyllabic with/without multi-syllabic vs Multi-syllabic	0.74 0.95	13 4	Q(16) = 40.97*	3.44	Q(15) = 35.73
Contexts	Single words vs Single words & connected speech	0.91 0.68	14 5	Q(18) = 40.95*	4.85*	Q(17) = 36.10*

Note. HOV = Homogeneity of variance within groups. PPD = Protracted Phonological Disorder. TD = Typical development. CTOPP = *Comprehensive Test of Phonological Processing* (Wagner et al., 1999). PAT-2 = *Phonological Awareness Test-2* (Robertson & Salter, 2007). PIPA = *Preschool & Primary Inventory of Phonological Awareness* (Dodd et al., 2003).

^a Other = New Zealand. ^b Months;years.

* $p = .05$

APPENDIX D: RESULTS OF TESTS OF MODERATORS FOR WORD DECODING (N = 17)

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Test for HOV	Q between Groups	Q within Groups
Cultural Context	US vs England and Other ^a	0.65 vs 0.67	8 9	Q(16) = 50.01*	0.81	Q(15) = 49.20*
Proportion Male Participants						
PPD	Near 50% to 60% vs 61% to 70%+	0.66 vs 0.76	6 8	Q(13) = 39.18*	0.74	Q(12) = 38.44*

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES (d _r [^])	n	Test for HOV	Q between Groups	Q within Groups
TD	Near 50% to 60%	0.69	10	Q(13) = 39.18*	0.63*	Q(12) = 38.56*
	vs 61% to 70%+	0.83	4			
Sample Size						
N _{PPD}	4 to 19	0.45	12	Q(16) = 50.01*	5.53*	Q(13) = 44.48*
	vs 32 to 86	0.78	5			
n _{TD}	4 to 44	0.62	14	Q(16) = 50.01*	1.42*	Q(15) = 48.59*
	vs 98 to 815	0.73	3			
Measures						
Standardized & Nonstandardized	WIAT, WRMT	0.63	7	Q(16) = 50.01*	1.22	Q(15) = 48.80*
	vs Other Standardized and Nonstandardized	0.73	10			
Standardized	WIAT, WRMT	0.63	7	Q(13) = 44.92*	0.96	Q(12) = 43.96*
	vs Other Standardized	0.69	7			
Participant Characteristics						
Mean Age Range at Literacy ^b	5;0 to 7;11	0.70	10	Q(16) = 50.01*	1.71	Q(15) = 48.30*
	vs 8;0 to 10;11	0.51	7			
Resolution	Unresolved	0.73	11	Q(16) = 50.01*	2.84	Q(15) = 47.17*
	vs Resolved with/without Unresolved	0.51	6			
Severity	Mild, Moderate with/without Severe	0.69	10	Q(14) = 27.47*	.27	Q(13) = 27.20*
	vs Moderate and/or Severe	0.62	5			

Appendix D: (Continued)

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Test for HOV	Q between Groups	Q within Groups
Participant Characteristics (Continued)						
Complexity of Speech Evaluation						
Word Length	Mono- and disyllabic	0.59	8	Q(13) = 30.24*	4.14*	Q(12) = 26.10*
	vs Multi-syllabic with/without monosyllabic	0.73	6			
Contexts	Single words	0.68	10	Q(13) = 30.24*	3.31*	Q(12) = 26.93*
	vs Single words & connected speech	0.63	4			

Note. HOV = Homogeneity of variance within groups. PPD = Protracted Phonological Disorder. TD = Typical development. *WIAT* = *Wechsler Individual Achievement Tests* (Wechsler, 1992a). *WRMT* = *Woodcock Reading Mastery Test* (Woodcock, 1973, 1987, 1998). *TWS* = *Test of Word Spelling* (Larsen et al., 1999).

^a Other = New Zealand. ^b Months; years.

* $p = .05$

APPENDIX E: RESULTS OF TESTS OF MODERATORS FOR NONWORD DECODING (N = 9)

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Test for HOV	Q between Groups	Q within Groups
Cultural Context	US	0.61	5	Q(7) = 34.71*	3.38	Q(6) = 31.33*
	vs England and Other ^a	0.28	3			
Proportion Male Participants						
PPD	Near 50% to 60%	0.75	3	Q(6) = 27.93*	2.77	Q(5) = 25.16*
	vs 61% to 70%+	0.38	4			
Sample Size						
N _{PPD}	9 to 19	0.13	6	Q(8) =	14.43*	Q(7) =

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Test for HOV	Q between Groups	Q within Groups
	vs 33 to 44	vs 0.89	3	35.20*		20.77*
n _{TD}	6 to 24	0.23	5	Q(8) = 35.20*	6.48*	Q(7) = 28.73*
	vs 30 to 98	vs 0.75	4			
Participant Characteristics						
Mean Age Range at Literacy ^b	4;0 to 7;11	0.88	5	Q(7) = 28.88*	14.21*	Q(6) = 14.67*
	vs 8;0 to 10;11	-0.03	3			
Resolution	Unresolved	0.88	5	Q(8) = 35.20*	20.35*	Q(7) = 14.85*
	vs Resolved	-0.08	4			
Severity	Mild, Moderate with/without Severe	0.78	3	Q(8) = 35.20*	15.00*	Q(7) = 20.20*
	vs Moderate and/or Severe	-0.16	6			
Complexity of Speech Evaluation						
Word Length	Mono- and disyllabic	0.63	5	Q(7) = 26.90*	.07	Q(6) = 26.83*
	vs Mono-, di- and multi-syllabic	0.68	3			

Note. HOV = Homogeneity of variance within groups. PPD = Protracted Phonological Disorder. TD = Typical development.

^a Other = New Zealand. ^b Months; years.

* $p = .05$.

APPENDIX F: RESULTS OF TESTS OF MODERATORS FOR SPELLING (N = 14)

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Test for HOV	Q between Groups	Q within Groups
Cultural Context	US	0.90	7	Q(12) = 41.66*	6.98*	Q(12) = 34.71*
	vs England and Other ^a	0.77	7			
Proportion Male Participants						
PPD	Near 50% to 60%	0.99	3	Q(10) = 18.97*	2.16	Q(9) = 16.81
	vs 61% to 70%+	0.85	8			
TD	Near 50% to 60%	0.90	6	Q(11) = 22.92*	2.07	Q(10) = 20.86*
	vs 61% to 70%+	0.82	6			
Sample Size						
N _{PPD}	4 to 23	0.68	10	Q(13) = 41.69*	9.50*	Q(12) = 32.19*
	vs 39 to 86	0.97	4			
n _{TD}	4 to 24	0.68	10	Q(13) = 41.69*	9.50*	Q(12) = 32.19*
	vs 35 to 219	0.97	4			
Measures						
Standardized & Nonstandardized	WIAT, TWS and Other ^b	0.81	10	Q(13) = 41.69*	7.47*	Q(12) = 34.22*
	vs Nonstandardized	0.99	4			
Standardized only	TWS	0.64	4	Q(8) = 23.40*	.60	Q(7) = 22.80*
	vs Other ^b	0.82	5			
Participant Characteristics						
Mean Age Range at Literacy ^c	5;0 to 7;11	0.94	5	Q(12) = 41.97*	8.00*	Q(11) = 34.00*
	vs 8;0 to 10;11	0.77	8			
Resolution	Unresolved	0.94	7	Q(12) = 41.91*	7.65*	Q(11) = 34.26*
	vs Resolved	0.77	6			

Study Characteristics						
Moderator	Groups Tested	Mixed Weighted ES ($d_r^{\wedge}$)	n	Test for HOV	Q between Groups	Q within Groups
Severity	Mild, Moderate with/without Severe	0.86	3	Q(9) = 25.16*	5.31*	Q(8) = 19.84*
	vs Moderate &/or Severe	0.84	7			
Complexity of Speech Evaluation						
Word Length	Monosyllabic	0.79	7	Q(11) = 22.66*	5.66*	Q(10) = 17.00
	vs Multi-syllabic with/without mono- and disyllabic	0.87	5			

Note. HOV = Homogeneity of variance within groups. PPD = Protracted Phonological Disorder. TD = Typical development. *WIAT* = *Wechsler Individual Achievement Tests* (Wechsler, 1992a). *TWS* = *Test of Word Spelling* (Larsen et al., 1999).

^a Other = New Zealand. ^b Other = *Graded Word Spelling Test* (Vernon, 1997), *Schonell Graded Spelling Test* (Schonell & Schonell, 1956) and *Metropolitan Achievement Test* (Durost et al., 1959). ^c Months;years.

* $p = .05$

Chapter 28

CLINICAL OUTCOMES IN MEDICAL SPEECH-LANGUAGE PATHOLOGY

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ABSTRACT

This chapter will report on a large patient population (est. 20,000 from 1992-2013) from the Beaumont Health System (Michigan) which had been tracked consecutively on two different clinical outcome programs since 1992. The population includes inpatients and outpatients treated at multiple hospital and rehabilitation centers. Adults and children with communication disorders were tracked utilizing a customized clinical outcome software program (The Beaumont Outcome Software System ©, BOSS) with a large clinician based staff. After ten years the Speech-Language Pathology Department, Beaumont Health System transferred their outcome program to the American Speech-Language Hearing Association's National Outcome Measurement System ©, NOMS). This chapter reports and compares the two clinical outcome systems (BOSS© and NOMS©) and discusses how outcome data contributes to Speech-Language Pathology management.

Keywords: speech, language, outcome, pathology

PURPOSE AND VALUE OF CLINICAL OUTCOMES

There are many forms of clinical measurement. [1, 2, 3] The scientific development of standardized testing is a long and rigorous process that may include instrumental or psychosocial assessment. Normative standards of disease and management in clinical

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medicine and rehabilitation are abundant and utilized by clinicians, researchers and academics. These highly sensitive objective measures assist the professional in differential diagnosis, assessing impairment severity and making predictions for future quality of life considerations.[3] Clinical outcomes, however, are functional measures of change overtime on a standardized subjective clinical scale among individuals with a common diagnosis. [2, 4, 5, 6] They are not indications of diagnosis, impairment, absolute performance, competence or capacity. They are poor predictors of the future quality of life or final achievement of rehabilitation potential. They are expressions of progress. They are not highly sensitive, precise measures of overall clinical competence. Nor do they predict permanence. Clinical outcomes can describe the effectiveness of the treatment strategy implemented to improve the patient's status during the time measured. They may be correlated to costs, can be used to compare clinician performance, program types, and analyze patient demographics. They are at the least, a poor predictor of the final possible outcome and at the most an indication of the effectiveness of the treatment intervention at the time. They are a measure of movement, much like a thermostat, that tells nothing about the source, or the future of temperature change, just that there is more or less heat. Outcomes are not like a complex computer program differentially diagnosing diseases, or proposing strategies for treatment programs. Outcomes can tell you there is change and it's moving in the right direction. This is in fact what our payors, administrators, politicians, and patients want to know from our clinical interventions. Center for Medicare-Medicaid System (CMS) does not necessarily want to know the exact outcome or exact achievement but rather the effectiveness of a treatment program to produce progress. [7] That's what they will pay for, and that is what we can describe as "clinical value". Payors, patients and politicians know that the actual outcome is highly dependent on a large series of variables dependent on the individual and environ. They want to pay for progress, and they want a report card compared (benchmarked) with other providers. [6]

BEAUMONT OUTCOME SOFTWARE SYSTEM© 1995

In the early 1990's William Beaumont Hospital, a 1000 bed multiple hospital and rehabilitation center system decided to take clinical outcomes seriously. Their major departments were encouraged to seek out or develop a system of reporting treatment effectiveness as outcome measures that could be used by program planners, patients, third party payers and professional associations for potential benchmarking. The Speech-Language Pathology Department at Beaumont, began to develop their own computer based entry and analysis system known as the Beaumont Outcome Software System© (BOSS) [8]. The BOSS developed a series of seven point subjective and objective scales (i.e., 60 scales for adults and children) used to record severity before and after treatment as judged by clinicians. (Appendix II) The intent was to report treatment effectiveness or clinical progress from the time of admission (initial evaluation) to the discharge from treatment. A very friendly computer form of fifteen patient features was developed to enter into the software database. A more sophisticated software (BOSS©, Fred Weiner, PhD) program was developed to analyze the interactive effects of the patient features (i.e., Admission Score & Date, Discharge Score & Date, Age, Gender, Communication Diagnosis, Clinician, Length of Stay, Number of Clinical

Procedures, Charges). [8] A software program was developed for retail distribution and an interface program was developed to allow clinicians to directly enter their BOSS scores on the hospital medical records system. The BOSS was used in our department for eleven years (1995 through 2006) and collected in excess of 20,000 adult and childhood patient outcomes. Our Beaumont Health System has since grown into a 1738 bed multiple medical center organization with a Speech-Language Pathology Department that has over 70 speech-language pathologists providing 60,000 clinical procedures annually. Here is what we discovered.

GRAND AVERAGE OF CLINICAL OUTCOMES (1995-2006) AT SEVEN SITES

Table 1 summarizes the BOSS© outcomes from 1995 through 2006. The Beaumont Speech-Language Pathology Department clinical staff (45 clinicians at the time) reported on 20,000 patients discharged from treatment at seven different clinical sites (i.e., (1) Outpatient Voice and Stuttering Clinics, (2) Center for Children's Speech-Language Disorders, (3) Outpatient Adult Center /Royal Oak, MI, (4) Outpatient Adult Center/Troy. Mi, (5) Inpatient Rehabilitation Unit/ Royal Oak, MI (6) Dysphagia Program /Royal Oak, MI, and (7) Dysphagia Program/ Troy, Mi). Table 1, illustrates the number (N) of patients treated at each site, the average treatment progress achieved on a 7 point scale at each site, the length of stay in days, the number of procedures (evaluation and treatments) and the average discharge status all on a 7 point scale. Clearly there are variations in these outcomes that reflect the severity and nature of communication disorders. Our Dysphagia Programs average only 7-9 days of treatment with 4-5 treatment sessions and achieve a respectable 5.1 on a scale of 7 ("7" describes a normal swallowing performance). Whereas our Center for Children's Speech-Language Disorders reveals a discharge status of 4.6 with an average of 62 treatment procedures over a period of one year (385 days). The outpatient Voice and Stuttering Clinics average the most progress on a seven point scale (5.7) in 57 days with an average of 3 treatment sessions. The Voice and Stuttering Clinics can be described as clinically efficient, that is greater GAIN for the least COST (i.e., Length of Stay and Number of Treatments). Different communication diagnoses not only require different treatment strategies, involve different length of stay but they also produce different clinical outcomes.

It is valuable to compare our inpatient rehabilitation program (Inpt.Rehab/RO) with our outpatient rehabilitation program, treating similar patients with medical diagnoses of Closed Head Injury, Stroke and other Neuropathologies (i.e., Parkinson Disease, Multiple Sclerosis).

The inpatients were treated over a 17 day period and received 18 treatment sessions. They made some progress (1.0 level of movement on a seven point scale) and finished the treatment program at 5.0 (a good discharge scale value).

Compare that to our outpatient adult rehabilitation program where we treated for an average of 68 days (two months) and with 23 treatment sessions and they were discharged at a slightly higher progress level at 5.4 . An outpatient program begins treating patients later after their disease onset and those patients can be seen more often with appropriate reimbursement coverage. These patients are shown to make more progress in a longer

treatment program. Reaching a level of 5 on the progress scale is what we consider a “functional performance level”. Seven would be normal communication skills.

Table 1. Beaumont Outcome Software System © 1995-2006, N: 20,066

Clinic Site	N	Treatment Progress	Length of Stay (days)	Number of Treatments	Discharge Status
Voice & Stu. Clinics	1803	3	57	4.5	5.7
Children’s Center	4343	2.4	385	62	4.6
Outpatient Adults/RO	1212	1.2	68.8	23	5.4
Outpatient Adults/Troy	1533	1	59	16	5.3
Inpatient Rehab/RO	1639	1	17	18	5
Dysphagia Program/RO	4197	3.3	9.9	5.1	5.1
Dysphagia Program/Troy	5339	.62	7.1	4.1	5.1
Grand Mean Values		1.7	86.2	19	5.1
Total Patients	20,066				

Clinical Outcomes (mean values) at Seven Clinical Sites Page 4.

Comparing the two Dysphagia treatment programs in Table 1 it can be noticed that both programs were able to achieve a 5.1 discharge level, which is good functional performance. However the RO Dysphagia program had a longer length of stay (9.9) and greater treatment progress (3.3) with 5.1 procedures. They saw their patients early in the onset of their disability. The TROY program saw them later post-onset and made less progress in fewer days and fewer treatments but still achieved the same Discharge level. The programs were not different in their treatment effect but the patients were seen at different times post-onset.

These grand average clinical outcomes in Table 1 illustrate how different our clinical program strategies need to be to accomplish a good clinical outcome. Some of our programs are considerably more expensive (length of stay or number of procedures) like our Children’s Center of Speech –Language Disorders, when compared to our outpatient Voice and Stuttering Clinics or our Dysphagia programs. Nonetheless, all these services are demanded by our medical community, and we usually succeed at getting all our patients to a Discharge level of 5, which is considered a good “functional level of performance”.

AVERAGE OUTCOMES OF THREE OUTPATIENT CLINICS IN 2000

Table 2 illustrates all the outcomes collected at three very different outpatient sites in 2000.

Table 2. Beaumont Outcome Software System© 2000, Three Sites

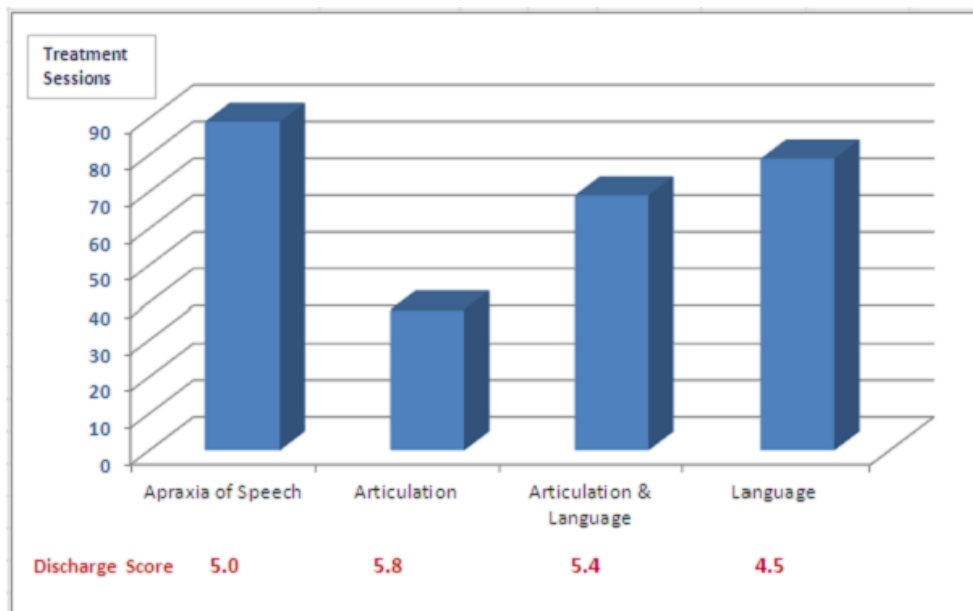
Outcome Parameter	Voice & Stuttering	Children's Center	Outpatient Adults
Admission Score	2.74	2.50	4.23
Discharge Score	5.65	4.80	5.28
Clinical Progress	2.9	2.3	1.04
Number of Treatments	4.43	66.6	20.7
Length of Stay	54.1	348.1	64.3
Est.Charges	\$515	\$4482	\$3564
Pt. Satisfaction (7 pt. scale)	6.3	6.7	6.8
N (Completed Treatment)	111 (52%)	185 (36%)	81 (83%)
N (Evaluated Only)	214	516	97

Voice & Stuttering Clinics, Children's Center and Outpatient Adult Program Page 5.

The Voice and Stuttering Clinics were at the medical office building (MOB) and you can see that 111 patients of the 214 that were evaluated, completed treatment. That is a 52% of treatment completion rate. Only the patients who completed treatment were used to score outcomes. These patients were initially, moderately severe in their communication disorder outcome rating (admission score 2.7) and were discharged at a 5.6 level which reflects good clinical progress of 2.9 levels . On average they remained in treatment for 54 days and received 4 treatment sessions. This is an extremely efficient (minimal time and good gain) clinical outcome. The shorter the length of stay and the fewer procedures the less the cost to the patient/payor. We estimated on average in circa 2000 year dollars, a total charge of approximately \$515.00 for this service. If we compare these outcomes to our Children's Center (BMC) we note comparable admission severity (2.5) with good but less discharge outcome at 4.8 and a very long period of treatment (348 days) with 66 procedures and an estimated 2000 year dollar value of \$4482. While we achieve good clinical outcomes with these children it is much costlier to provide these services and achieve the desire outcome. Finally, examining our outpatient adult outcomes (BRHC) we can see that our admission severity level is much less than our Children's Center or our Voice & Stuttering Clinic. These patients have already received inpatient rehabilitation and have made some clinical progress. Their admission severity is 4.2 and they are discharged at a very good 5.3. They required an average of 64 days of treatment and 20 treatment sessions, very likely limited by their insurance caps. The charges in 2000 year dollars was estimated at \$3564.00. Different clinical outcome measures (length of stay, number of treatments, and possible reimbursement) can be used to describe different clinical programs.

CHILDREN'S BOSS© OUTCOMES 2000-2006 BY COMMUNICATION DIAGNOSIS

Chart #1, illustrates the different number of treatment procedures required to obtain a good "functional clinical outcome" (5.0 or better) for a particular diagnosis.



4 Diagnoses by Number of Treatments and Discharge Scores at the Center for Childhood Speech-Language Disorders, Page 6.

Chart 1. Beaumont Outcome Software System © 2000 to 2006, N: 581.

Apraxia of speech in children is a very challenging disorder and in our experience required on average 89 treatment sessions to achieve an outcome of 5.0. Whereas articulation disorders in children required only 38 treatment sessions to obtain a discharge outcome of 5.8, language disorders required more treatment sessions (78) to obtain a discharge score of 4.5. All four childhood communication disorders did well in treatment but each one required a different number of sessions to achieve that outcome. These are important features to discuss with parents when they need to anticipate their costs in keeping their child in a treatment program that is going to have a good outcome.

ADULT BOSS© OUTCOMES IN 2003 BY COMMUNICATION DIAGNOSIS

Table#3, illustrates how different adult communication disorders can exhibit different discharge status outcomes and can require different numbers of treatment sessions and length of stay.

Table 3. Beaumont Outcome Software System© 2003, Adult Outpatients

Communication Diagnosis	Discharge Score	Treatments	Length of Stay	Patient Satisfaction
Aphasia	5.5	19	60	6.4
Apraxia	4.5	15	42	6.2
Dysarthria	5.7	9	29	6.5

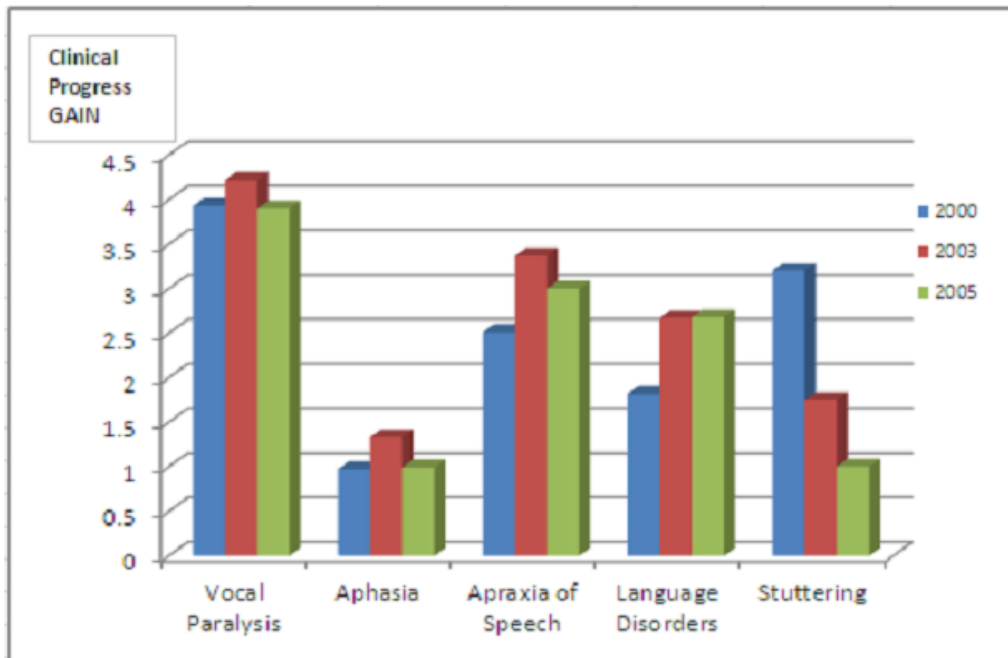
3 Adult Communication Diagnoses by Discharge Status, Number of Treatments Length of Stay and Patient Satisfaction. Page 6.

The length of stay (days in treatment) and the number of procedures or treatment sessions can be considered a short hand for the cost to the patient or payor for services. Ideally we want to achieve a positive clinical outcome and leave the patient with a good satisfaction. In Table #3, you can see how treating Aphasia is more time consuming and costlier to the payor/patient than the other diagnoses but we can achieve a very good discharge outcome at 5.5. Apraxia of speech probably had the least effective outcome at 4.5 with 42 treatment sessions. Dysarthria is the least expensive (29 days of treatment) and 9 sessions with an excellent discharge outcome of 5.7. In all three diagnoses, regardless of length of stay or outcome, the patients provided a high satisfaction score (6.4, 6.2 and 6.5).

CLINICAL OUTCOMES IN FIVE COMMUNICATION DIAGNOSES IN THREE DIFFERENT YEARS

Sometimes our success with patients can vary year to year. In Chart #2, we illustrate how treating the same communication diagnosis in three different years (2000, 2003, 2005) can vary. If we examine Vocal Cord Paralysis patients we notice how the clinical outcome (i.e., amount of progress on a seven point scale) only varied from 3.9 in 2005 to 4.2 in 2003, but in the case of Stuttering the clinical progress varied from 1.0 in 2005 to 3.2 in 2000. The Aphasia group, on the other hand varied very little from .9 to 1.3 to .99 in 2000, 2003 and 2005.

These variances in GAIN or clinical outcome progress can be attributed to the admission severity level, comorbidities, discontinuance of treatment or motivational issues on the part of these patients. It is interesting to examine the chart and notice how the Aphasia group tends to maintain a lower stereotypic gain in each of the three years sampled compared to the Stuttering group. These differences may be directly related to the complexity of the communication disorder to be treated.



Variations in Discharge Status by Year and Communication Disorder Page 7.

Chart 2. Beaumont Outcome Software System© Variations in Discharge Status.

WHAT WE LEARNED FROM THE BEAUMONT OUTCOME SOFTWARE SYSTEM

1. Common discharge GOAL of “5” emerges across all diagnoses by clinicians.
2. Length of stay was predictable and was stereotypic of diagnosis, severity, & complexity.
3. Cost was related to LOS.
4. Referral patterns and comorbidity affected outcomes. Early referrals better, late and re-admits worse. Less comorbidity resulted in better outcomes and shorter LOS.
5. Clinician’s experience impacted outcomes. More experienced-- more efficient.
6. Outcomes do not predict Quality of Life or communication competence but they do predict patient satisfaction.
7. BOSS Outcomes could not be compared (benchmarked) to region or nation.
8. Advancing computer technology made data entry, integrated analyses, and large database possible but expensive. The lack of benchmarking without recurring investment and CMS recognition of ASHA NOMS dictated the transition to NOMS.

9. BOSS© outcomes were used: (a) to persuade payors to consider payments for Voice rehabilitation. (b) to demonstrate that clinical progress with Aphasic patients could not be accomplished without a minimal length of stay and treatment sessions. (c) to explain to the hospital administration the variance in clinical outcomes. (d) to demonstrate effectiveness of treatment options for Autism and Down's when costs and length of stay were difficult to manage. (e) to expand staff when clinical value (cost divided by GAIN) was good (f) to meet JCAHO, CMS & BCBS standards of outcome reporting. (g) to argue the need to remove the CMS CAP on post-stroke rehabilitation. (h) to consider Cost-Effectiveness formulas for SLP treatment programs. (i) to facilitate an easy transition to ASHA NOM System

NATIONAL OUTCOME MEASUREMENT SYSTEM© 1997

In 1993 the American Speech-Language Hearing Association began a profession wide examination of treatment effectiveness in all healthcare environs.[9,10] This was undertaken in response to its professional members, third party payors and their patients requests to have a broad based report card of the effectiveness and efficiency of our clinical services. In 1997 after several investigations and the efforts of a national task-force to establish a national data, the National Outcomes Measurement System (NOMS) of the American Speech-Language Hearing Association was developed. [6] The objective of the NOMS database was to demonstrate the “ value of speech-language pathology services ... provided to children and adults with communication and swallowing disorders” . [10]

The NOMS is based on a series of twenty one Functional Communication Measures that are organized as seven-point-equal-appearing interval clinical subjective scales. The seven point scales were standardized and developed with professional clinicians to clearly express the level of functional communication independence. Six of the communication performance scales are designed for childhood communication disorders and fifteen were developed for adults. Each scale delineates a communication function (i.e., articulation, comprehension, voice, pragmatics etc.) critical to identifying the severity of the disorders of communication. Level 1 on the functional communication scale (FCM) is the worst possible performance and level 7 is a normal functional level of communication performance. Each scale was carefully defined and revised to express the optimal agreement amongst professional clinicians as to the level of performance. (Appendix II)

Healthcare organizations with speech-language pathology service programs must register and train each of their clinicians to be certified to use the NOMS data collection system. The NOMS was designed to compare the clinical outcomes for a number of different communication disorders with a variety of demographic features (age, gender, medical disorder, length of stay, reimbursement, number of treatment, service delivery type etc.) . It is also designed to benchmark or compare treatment effectiveness or “value” of services provided between different facilities both regional and throughout the United States.

How are ASHA-NOMS© (est.1997) Different from the BOSS © Outcomes (est.1995)

- a. NOMS measures the per cent of patients that make progress on the 7 point Functional Outcome Scales chosen for communication diagnosis.
- b. BOSS measured the amount of progress that patients made on a 7 point outcome scales chosen for that specific communication diagnosis.
- c. NOMS measures the percent of patients that did not make any progress.
- d. BOSS measured the number of outliers (patients) who scored well below average at a particular clinical site and for a specific the communication diagnosis.
- e. NOMS benchmarks a facility's outcomes to the regional or national outcomes.
- f. BOSS did not benchmark their outcomes.
- g. NOMS uses standardized (21) Functional Communication Measures for all communication diagnoses.
- h. BOSS used sixty seven point scales developed by experienced clinicians specifically related to each communication diagnosis.
- i. NOMS & BOSS both use length of stay, number of treatments, and admission scores to be compared with patient discharge scale scores.

The NOMS values the highly developed Functional Communication Measure as its key to estimating patient progress and clinical effectiveness. It's capacity to benchmark these outcomes to other facilities throughout the nation is unique and clearly advantageous. The NOMS is clearly the most reliable outcome measure and the gold standard in speech-language pathology clinical outcomes.

We learned a great deal from developing and using the BOSS outcome system as it prepared us to immediately adopt the NOMS system as our healthcare outcome system.

WHAT WE ARE LEARNING FROM ASHA- NOMS© AT BEAUMONT

Benchmarking Outcomes

We have been collecting NOMS outcome data for approximately seven years and have become accustomed to examining our outcomes compared to other clinical facilities in the Michigan region and the United States. Although we have only been collecting 3 to 6 year old children's outcomes for the past seven years, we are pleased to see that our clinical services produce as much if not more progress in our patients than the nation. The American Speech-Language Hearing Association, that operates the National Outcomes System (NOMS), provides these comparisons for any period of time that we may choose.

Table 4. NOMS© for Pre-Kindergarten at Beaumont, 2007-2013, N: 382

Pre-K Children 2007-2014	Beaumont	Nation
Articulation/Intelligibility	*86%	76%
Cognitive Orientation	87%	63%
Pragmatics	79%	62%
Spoken Language Comprehension	81%	67%
Spoken Language Production	83%	68%
Grand Average	82%	66%

**Percent of Patients Who Make Progress*

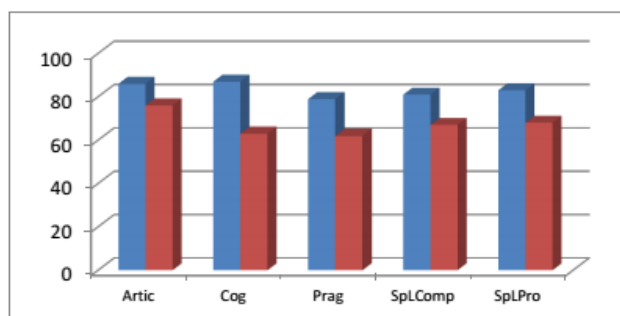
**Bar Graph Illustration of Table 4**

Chart 3. Benchmarked to the Nation N: 6138. Page 11.

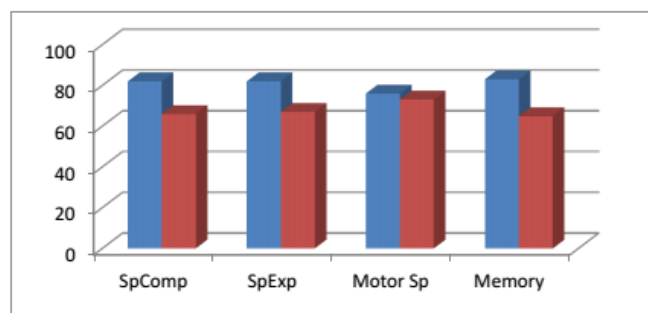
In Table 4 we display all of our childhood patient (N:382) outcomes from 2007 through 2013 on four different functional communication measures (i.e., FCM: Articulation/Intelligibility, Cognitive Orientation, Pragmatics, Spoken Language Comprehension and Spoken-Language Production) compared to the national benchmark (N: 6138). In all these FCM's we were able to exceed the average percent of patients making progress compared to the benchmark. We can average all these FCM's and report to our hospital administration that we average 82% for children making progress in our clinical services compared to the nation's 66%. The bar graph below Table 4 easily demonstrates these benchmarked comparisons. While it is comforting to report these clinical outcomes to our hospital and the public, these outcomes can certainly vary by a number of variables including case mix (i.e., different childhood diagnoses) admission severity and time in-treatment (90 days, 6 months or annually). Now that we have collected these large childhood populations rated on the NOMS (i.e., Beaumont N: 382 versus Nation N; 6138, accumulated during a seven year period 2007-2013) we can compare them to six month and twelve month outcomes and begin to consider the possible influences that affect these outcomes.

Table 5 demonstrates the adult outpatient outcomes in this same seven year period for four different Functional Communication Measures (FCM) also benchmarked against the nation, as reported by the American Speech-Language-Hearing Association. We exceed the percent of patients making progress in all four FCM's compared to the nation, but we are within the 95% confidence interval in Motor Speech, suggesting that our 76% and the nation's 73% are comparable or not significantly different. The nation's NOMS scores represent 23,437 patients across all the national facilities using NOMS and our patient population for this interval (2007-2013) is 517. These large differences can create percent progress variations. The ASHA NOMS provides patient demographics and case mix characteristics for the period samples requested. It is important to note that in these two populations, Beaumont's number of cerebrovascular disease patients were 46.6% of our caseload and only 17% of the nation's caseload. Further, our head injury population represented 26.1% of our caseload and only 3.7% of the nation's. Consequently 71% of our patients exhibited Aphasia and 16% presented with Dysarthria, compared to the nation's 11.4% of Aphasia diagnoses and 8.6% of Dysarthria diagnoses. The nation, during this period of time (2007-2013) reported that 59.9% of their adult caseload were treated for Dysphagia and only 9.8% of our patients were treated for Dysphagia. These variations in patient population mix will influence the overall Functional Communication Measures of patient progress.

Table 5. NOMS© for Adult Outpatients at Beaumont, 2007-2013, N: 517

Outpatient Adult 2007-2014	Beaumont	Nation
Spoken Language Comprehension	*82%	66%
Spoken Language Expression	82%	67%
Motor Speech	76%	73%
Memory	83%	65%
Grand Average	82%	69%

**Percent of Patients Who Make Progress*



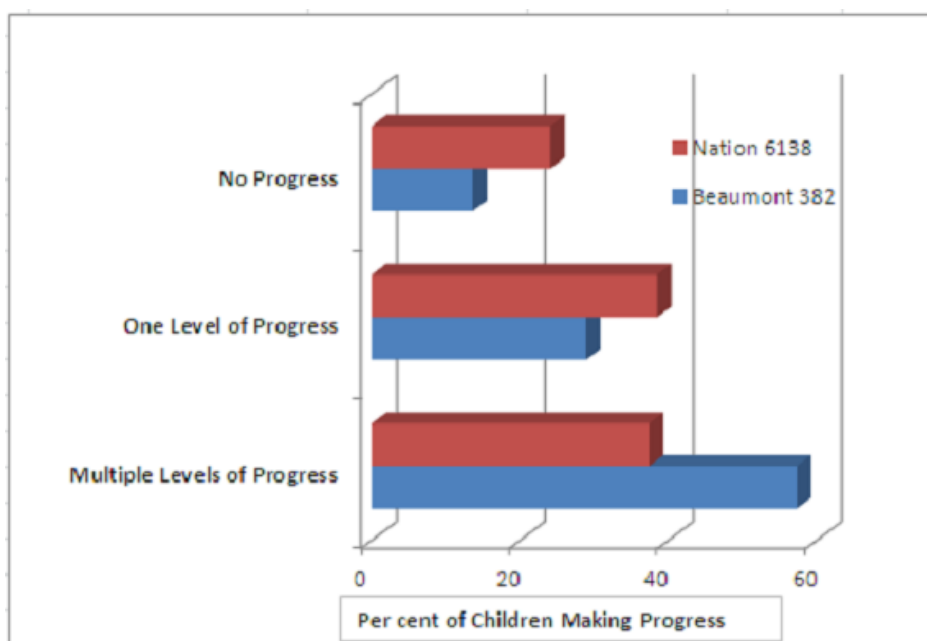
Bar Graph Illustration of Table 5

Chart 4. Benchmarked to the Nation N: 23,437. Page 11.

LEVELS OF PROGRESS ON THE NOMS©

Another way of possibly examining a facility's clinical effectiveness is to look at the number of patients who are not making any progress. In Chart #3 we illustrate our children's progress over this 2007-2013 period of time on one FCM (articulation/ intelligibility) . Compared to the nation, Beaumont demonstrated a smaller percent of patients making no progress, 13.9% than the nation

24.1%. Further we had a smaller percent of children making one level of progress (28.9%) compared to the nation (38.5%), however we made up for this reduction by demonstrating a larger percent of patients making multiple levels of progress (57.3%) compared to the nation at 37.4%. Our overall percent of children making progress for this FCM was 86.1% compared to the nation's 75.9%. These differences can usually be accounted for by differences in communication disorder diagnosis. Autism Spectrum Disorders and Down syndrome patients will make progress but are unlikely to make multiple levels of progress compared to Articulation and Language disorders.



Per Cent of Children Making Progress Benchmarked to the Nation Page 12.

Chart 5. NOMS© Pre-Kindergarten at Beaumont, 2007-2013. Functional Communication Measure- Articulation/Intelligibility.

POPULATION DEMOGRAPHICS THAT CAUSE VARIATIONS IN NOMS© OUTCOMES

In Table 6 we can clearly see how patient demographic characteristics can alter the potential NOMS score of "Per Cent of Patients that Make Progress". Here we compare a large patient population in our Adult Outpatient Clinics from 2007-2013 (N: 517) to the nation's

patient population (N: 23,537). It is very clear that we see a different case-mix of adults who we treat compared to the nation. While our patient's average age range (60-69) is grossly comparable to the nation (i.e., 21% Beaumont and 16% Nation), our medical diagnoses and communication diagnoses are not similar (i.e., Beaumont at 46.5% CVA and 71% Aphasia, compared to 17.3% CVA and 11.4% Aphasia for the Nation). Further, a significantly larger number of our patients (97.3%) are treated in a 46-90 minute treatment session compared to the Nation (19.6%). We might also have made greater progress with our patients because we treated them on average for a 57 day length of stay and the nation shows only 31 days of treatment. Finally, a large percentage of our patients are discharged directly to home (91.2%) compared to the nation at 38.4%, indicating that our patients did not have to return to the hospital, convalescent facility or skilled nursing facility. Our patients likely had fewer comorbidities and less severe disease and consequently less impairment or disability.

Table 6. NOMS© Demographic Characteristics of Adult Outpatients, 2007-2013 N: 517

Demographic Characteristic	Beaumont Health System	Nation
Age 60-69	21.2%	16.2%
Medical Diagnosis: Cerebrovascular Accident	46.5%	17.3%
Speech-Language Pathology Diagnosis: Aphasia	71%	11.4%
Per Cent of Patients Treatment Goals Met	61.5%	50.6%
Average Number of SLP Treatment Sessions	19.4	13.2
Length of SLP Treatment Session: 46-90 minutes	97.3%	19.6%
Average Length of Stay	53.7	31.3
Discharge Disposition: Home	91.2%	38.4%

Benchmarked to the Nation, N: 23,537 Page 12.

BENCHMARKING BY REGION AND NATION

Another positive feature of the ASHA-NOMS is its capacity to compare our facility outcomes with the local region as well as the nation. These are very helpful comparisons for hospital administrators who are conscious of competition, and our third party payors who may be interested in relative clinical effectiveness and value. Table 7 briefly demonstrates our

per cent of progress outcomes when compared to our Beaumont region (i.e., Michigan, Ohio, Illinois, Indiana and Pennsylvania). The Table demonstrates our Pre-Kindergarten population for the year 2010 on three FCM's (i.e., Articulation/intelligibility. Speech-Language Production, Speech-Language Comprehension). The numbers of patients in each FCM is relatively low as we discharged fewer children in this time period (2010) than usual. It is important to realize that some children are scored on one FCM or multiple FCM's depending on possible comorbidities or their specific communication disorder and the resulting treatment strategy.

The table demonstrates that we have greater numbers of children making progress compared to the Region and the Nation. For the Articulation/Intelligibility FCM we reported 83% of our children making progress and the Region and Nation tied at 75%. For the Speech-Language Production FCM Beaumont exhibited 92% of our children demonstrating progress with 83% for our Region and considerably less for the Nation at 70%. Again, these variations can be accounted for by patient population differences. One of the problems with using FCM's as the main feature of comparison in clinical treatment progress is that it covers a large potential variation in communication diagnoses.

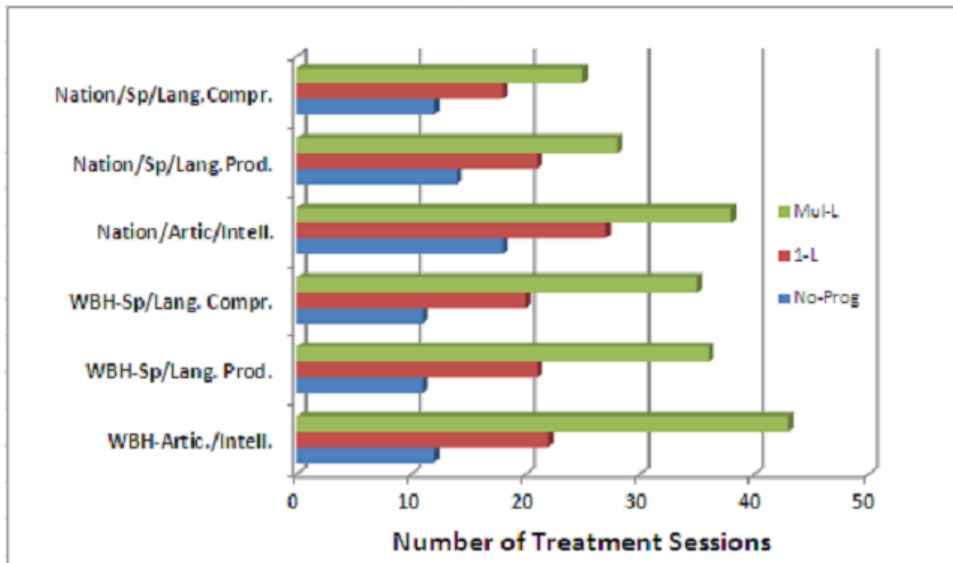
Table 7. NOMS© Reporting Beaumont Outcomes for Pre-Kindergarten 2010

Functional Communication Measure	N	Beaumont % Patients/Progress	Region* % Patients/Progress	Nation % Patients/Progress
Articulation/Intelligibility	54	83 %	75%	75%
Speech-Lang/Production	50	92%	83%	70%
Speech-Lang/Comprehension	35	91%	84%	69%

3 Functional Communication Measures Benchmarked to Region and Nation Page 13.

IMPACT OF THE NUMBER OF TREATMENT SESSIONS ON NOMS© OUTCOMES

There is little disagreement among most clinicians that the more treatment sessions provided and/or allowed for by third party payors will affect the clinical outcomes. Chart 6 examines this premise in our Beaumont Pre-Kindergarten population (N: 382) compared to the Nation (N: 6138). The Chart illustrates that per cent of progress made by Beaumont and the Nation (Green and Red bars) increases with the greater number of treatment sessions provided.



Treatment Sessions by Levels of Progress in Pre-K Children			
	No-Progress	1-L	Mul-L
WBH-Artic./Intell.	12	22	43
WBH-Sp/Lang. Prod.	11	21	36
WBH-Sp/Lang. Compr.	11	20	35
Nation/Artic/Intell.	18	27	38
Nation/Sp/Lang.Prod.	14	21	28
Nation/Sp/Lang.Compr.	12	18	25

Table figures for Chart # 4

Comparing Progress by the Number of Treatment Sessions Beaumont, N:382.
Benchmarked to the Nation N: 6138 Page 13.

Chart 6. NOMS© Pre-Kindergarten 4 Functional Communication Measures, 2007-2013.

The “no –progress” (blue bar) for all FCM’s at Beaumont and the Nation also demonstrates that fewer treatment sessions were provided. The green bars or the multiple levels of progress designation clearly is correlated to the greater number of treatment sessions reported. These types of reports are extremely important in demonstrating to physicians, administrators, payors and politicians that cutting back the number of treatment sessions by staff reductions, failure to approve continuing treatment or reimbursement clearly reduces the demonstrated potential outcome gain.

COMMON CLINICAL ISSUES DEFENDED BY OUTCOMES

I. Dysphagia Outcomes Differ at Two Different Clinical Settings

We discovered several years ago that our swallowing rehabilitation programs at our main hospital (1070 beds) and our satellite hospital (418 beds) had noticeably different clinical

outcomes. Analysis of our collected outcome data allowed us to observe that our larger, Level One Trauma hospital saw their swallowing patients within 8-10 hours of referral and began treatment immediately to prevent aspiration and to establish safe swallowing protocols. They also continued swallowing treatment after transfer to the acute inpatient rehabilitation unit.

The smaller community hospital clinicians saw their dysphagia patients 1-2 days after referral with less measured severity, in some cases, due to apparent spontaneous improvement. The staff was able to provide safe swallowing and diet recommendations and were able to discharge them without as much intervention. The outcomes revealed that patients seen earlier after referral were given more treatment due to a more severe admission level. These outcome findings suggest that each clinical environment has its own special patient care protocols depending on specific patient needs.

II. Therapy CAPS for Aphasic Patients

As has been stated earlier in this chapter, our outcome data, as well as a number of studies demonstrates that fewer treatment sessions with patients experiencing aphasia, produces lower discharge outcomes.[4,5] Our outcome data suggests that a treatment program with 25-30 treatment sessions for speech and language pathology produces important gains in functional communication ability. Certainly, after 30 treatment sessions the outcome gain slows but is functionally significant. Recently, Medicare caps, limitations on treatment, for aphasic patients have been implemented nationwide. It is our opinion that, NOMS clinical outcome data, when used to analyze improvement for this and other populations of neurologically impaired patients, clearly demonstrates that these caps significantly diminish the potential for recovery or critical functional speech and language skills. It should be noted that CMS recognizes NOMS as an approved outcome measurement system. [7].

III. Third Party Voice Treatment Guidelines

Payors have asked us if we could demonstrate, with our population of voice-impaired patients, the optimal number of treatment sessions to produce maximum gain or benefit to the patient. Apparently there were providers who seemed to bill for an unusually high number of treatment sessions for certain diagnoses. We were able to submit NOMS and BOSS outcome data that included mean length of stay and mean number of treatments, for a number of different vocal pathology diagnoses for a number of outpatient adults. This data has been very helpful in obtaining treatment pre-authorization for patients in need of vocal rehabilitation.

IV. Employer Monitoring of Quality Measures in Health Care

All hospital settings monitor quality of care. Our facility has asked all the clinical service departments to present evidence of clinical quality metrics and we have used our clinical outcomes in this regard for the past twenty years. For some departments this has meant costly acquisition of outcome measurement systems. We developed the BOSS© system in 1995 and then transitioned to the ASHA NOMS© in 2006 at virtually no cost to our department. Our

hospital administration has readily accepted our NOMS outcome system and we often use these data to make the case for expanded resources. Our hospital system has asked us to simplify our outcomes reporting system and with the NOMS we can produce “grand average” dashboards or report cards that easily give us the ability to demonstrate and explain variations.

V. Answers Patient Questions on Clinical Prognosis

What clinician can say that they have never been asked the following questions by a patient:

How long will this treatment program take?
How many visits will be needed?
How much will this cost me or my payor?
Can I recover my normal functional voice, speech or language?
What increases my likelihood of a good clinical result?

Since we have used the BOSS© (1995) and the NOMS© (2006) we have been able, in certain clinical environments, to turn to our computers in the clinic and answer these questions. For example, we can tell a patient: from our outcome analyses in the past five years, that a person with vocal cord nodules has, on average, received 5-6 individual treatment sessions over a period 90 days and obtained a specific clinical improvement level. That usually means on a scale of 7 being normal, the patient is likely to achieve a 5, or better in this time frame. We can also tell them that sometimes age, medical comorbidities and initial severity may influence this outcome. This has been a valuable clinical feature that can foster confidence and motivation in our patients.

CONCLUSION

Life is like riding a bicycle.
To keep your balance you must keep moving.
Albert Einstein, in a letter to his son Eduard, February 5, 1930 [11]

Clinical outcomes can be extremely important to clinical programs when building the case for measuring the value of speech and language rehabilitation [4, 5, 6,2]. Outcome data collection can be used to demonstrate the critical benefits of our services to physicians, third party payors, administrators, government health care planners and our patients. [12] We can use outcome data to analyze and justify clinical programs by comparing effectiveness, efficiency and overall value. This information will be important as speech and language pathology is integrated into both national health planning initiatives and local accountable care organizations.

Clinical outcomes are not interpreted on “face value”. They must be reported carefully with appropriate benchmarking and in sufficient numbers (reliability and correlation power)

to be persuasive. They will be more effective when reported overtime, not in “brief periods” with no comparisons.

Clinical outcomes are powerful tools if carefully used. [4, 5, 9] They can be misinterpreted and rejected if not carefully presently and justified. The Beaumont Outcome Software System© (1995) was an early computer software program which attempted to account for treatment effectiveness over a ten year period of time in a large hospital based program. We learned some important lessons using the BOSS© and honed our skills at collecting and interpreting clinical outcomes. However, we were unable to benchmark our outcomes with local, regional or national programs. Further, we could not maintain the large and growing database in our hospital medical records system. The American Speech-Language Hearing Association’s development and maintenance of their National Outcome Measurement System was an excellent service to the profession. Reporting clinical outcomes does not replace our extensive and growing professional armamentarium of standardized tests and assessments for a large variety of communicative diagnoses. [1, 2] In the future, the inevitable expansion of software and computer technology will allow us to develop even more analyses of patient performance, demographics and progress. Our profession must remain aware of these developments and make every attempt to harness these opportunities for the long-term benefits of our patients [2, 10].

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Chapter 29

**VELOPHARYNGEAL FUNCTION AND SPEECH:
ANALYSIS OF SURGICAL OUTCOME
IN YOUNG ADULTS WITH REPAIRED CLEFT PALATE
AND RESIDUAL VELOPHARYNGEAL INSUFFICIENCY**

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ABSTRACT

The protocol for the evaluation and treatment of young adults with cleft palate at a Cleft Palate Center in Santiago, Chile is described. All the patients studied with this protocol were young adults present with residual velopharyngeal insufficiency (VPI) after palatal repair. All patients underwent a complete speech evaluation. Surgery for correcting VPI was planned individually in each case according to findings of videonasopharyngoscopy (VNP). All cases were operated on with a superiorly based pharyngeal flap. The surgical procedures were performed by the same surgeon in all cases.

Surgical outcomes of velopharyngeal function (VPF) were analyzed with postoperative VNP and a speech evaluation.

Patients with normal articulation before surgery showed adequate VPF one month after the pharyngeal flap was performed. None of these cases required Speech & Language Pathology (SLP) treatment.

None of the patients with compensatory articulation disorder (CAD) preoperatively showed adequate VPF one month after the pharyngeal flap operation. All these cases required SLP treatment including biofeedback with VNP. After a six-month period of SLP treatment and biofeedback, sixty – three percent of these patients achieved similar results as the group of patients with normal articulation before surgery. After a follow-up

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period of 6 months, a total of 79% of the cases showed satisfactory results of VPF during speech. Most patients showed good compliance and motivation for treatment.

Keywords: Cleft palate; Speech; Surgery

INTRODUCTION

Velopharyngeal Insufficiency (VPI) refers to any structural alteration of the soft palate and the pharyngeal walls where there is not enough tissue for a complete closure of the velopharyngeal sphincter (VPS) during the production of oral phonemes [1]. The percentage of patients with residual VPI following cleft palate (CP) repair varies from center to center, but in general it is estimated that 10 - 20% of patients with cleft palate will present with VPI post palatal repair. [2-4]

The presence of residual VPI affects various parameters of speech and voice resonance. The characteristic symptomatology is the presence of obligatory errors including: hypernasality, nasal emission, weak oral consonants and compensatory articulation disorder (CAD). [5]

Several surgical techniques for correcting VPI have been described. The selection of a specific technique for each patient depends on closure pattern as observed by videonasopharyngoscopy (VNP) and videofluoroscopy (VF). The most commonly used surgical techniques for correcting VPI include: Modified Orticochea's pharyngoplasty or lateral flaps operation; surgical increase of the posterior pharyngeal wall; superiorly based pharyngeal flap; and secondary surgical repair of velar muscles. [6]

It has been reported that surgery for correcting VPI yields better outcomes when it is performed at an early age, ideally before entering the preschool system, when communication demands increase. At this stage, around 4 years of age, children have usually acquired a greater number of phonemes and show better compliance for performing procedures which allow a full assessment of VPF including an instrumental evaluation of the VPS through VNP and VF. It has been reported that when VPI is corrected early, there is an improvement in over 90% of the cases. [7]

CAD refers to speech errors derived from unconscious patient attempts to produce a phoneme, usually a high intraoral pressure consonant sound. In these cases, articulation placement is displaced closer to the sound source, usually to the pharynx or the glottis. The most common compensatory errors are: the glottal stop and the pharyngeal fricative. [1] CAD is present more frequently in patients with severe VPI [8]. CAD significantly affects intelligibility.

In cases of CAD, prognosis is less favorable since speech sound errors are incorporated into Linguistic rules. Thus, it becomes much more difficult to change brain motor engrams, affecting surgical outcome and extending the total time of Speech & Language Pathology (SLP) intervention [1]. It has been described that articulatory placement and manner are more malleable at earlier ages. Therefore, even in cases of CAD, surgical correction of VPI can decrease total time of SLP treatment. Also, correcting hypernasality can provide more confidence for developing speech skills and abilities. [9, 10]

Currently, there are health programs and international organizations that promote and support early and timely care of patients with cleft palate (CP). Centers with more experience and better results usually perform the primary surgeries of lip and palate before one year of age. Early repair of the palate is recommended in order to minimize speech disorders. [11] Unfortunately there are patients that for various reasons do not have access to multidisciplinary treatment, thus hampering rehabilitation and integration into society.

Young adults with CP usually have an increased frequency of social, occupational and emotional limitations. [12] These limitations negatively affect the rehabilitation process. In these cases, CAD, VPI, palatal fistulae, abnormal dental occlusion and septal deviation are common findings. All these factors significantly affect quality of life [13, 14].

Some reports studying adult patients describe that there are no significant changes in the speech intelligibility following VPI surgery. This finding seems to be related with the articulatory errors that directly affect VPS motion during speech. Even with an appropriately planned surgical treatment, hypernasality is corrected in only 75% of the cases. [8]

Hamlen (1970) pointed out that poor surgical result in adults can be associated with greater difficulty for acquiring and using new speech abilities, as well as lack of family support. [15]

Several strategies can be used for the management of CAD including: Phonological approach; auditory biofeedback; and biofeedback with VNP. Traditionally it has been described that most patients with CAD respond positively to conventional speech intervention. Witzel et al, (1989) demonstrated that patients with velopharyngeal dysfunction associated with CAD undergoing pharyngeal flap, achieved a consistent closure of the VPS in connected speech after biofeedback therapy using VNP. [16]

Endoscopic feedback would be indicated for patients who do not respond to conventional intervention or those who are progressing too slowly. Fast and consistent positive results have been reported in patients with CAD who have undergone endoscopic biofeedback. With the use of this technique, CAD can be corrected in a few sessions. It has been reported that endoscopic biofeedback therapy seems to be superior to conventional intervention for treating velopharyngeal dysfunction associated with CAD. [17]

Direct visualization of the VPS supports articulation therapy creating a greater impact on the patient, improving learning and reducing total time of therapy. [16,18]

Young adults with residual VPI require an interdisciplinary management which basically considers the same procedures for evaluation and treatment as used in children, but with some modifications in its application, considering anatomical and emotional differences, as well as self - motivation.

The purpose of this chapter is to describe a protocol for treating VPI in young adults, considering individualized surgical planning and SLP intervention.

MATERIALS AND METHODS

Patients

Patients were recruited at the Fundacion Dr. Alfredo Gantz in Santiago, Chile, from 2005 to 2013. All cases who met the following inclusion criteria were included in the study group:

patients with cleft lip and CP or isolated CP; older than 17 years; without associated syndromes; with normal hearing; present with residual VPI after initial palatal repair; without fistulae; without further surgical procedures for correcting VPI other than the initial palatal repair.

All cases were assessed by the cleft palate team. They were guided by personal motivation and they committed themselves to undergo all necessary evaluations and interventions.

Speech Assessment

Each patient was evaluated before and after the surgery by the same Speech & Language Pathologist at the Fundación Gantz. The professional conducting the evaluations had more than 10 years of clinical experience in the evaluation and treatment of patients with craniofacial anomalies.

Severity of the VPI, presence of CAD and size of the gap as observed by VNP before the surgical procedure were assessed.

It should be pointed out that before performing the VNP, all patients should be able to produce at least 2 high oral pressure consonant phonemes with adequate placement during the repetition of syllables and isolated words. Therefore, SLP treatment was provided before the procedure whenever it was considered necessary to do so.

The VPI was classified according to the severity of the hypernasality and nasal emissions (Table1).

Table 1. Classification of VPI according to severity

VPI Severity	VPI Symptomatology
Without VPI	Normal Velopharyngeal Function; absence of hypernasality *; No nasal emission.
Mild VPI	Mild hypernasality - nasal turbulence.
Moderate VPI	Moderate Hypernasality – as perceived during the production of vowel sounds. Audible nasal emissions during production of most of the high pressure consonant phonemes.
Severe VPI	Severe hypernasality during the production of vowel sounds and oral consonant phonemes. Nasal emission in all high pressure consonant phonemes. Low pressure in oral consonant phonemes. Facial grimaces or movements associated with nasal emission.

* Severity of hypernasality was classified according to a previously reported 4-point scale [18].

Speech was classified according to the presence or absence of CAD. No CAD was considered as the condition in which the patient had normal articulation placement in all speech contexts, despite the presence of hypernasality; CAD was considered when articulation placement was abnormal in different contexts such as repetition of syllables, words, sentences and automatic or spontaneous speech.

Instrumental Evaluation of VPI

Pre and post-operative evaluation of the VPI was performed by VNP. A flexible scope with a diameter of 3.5mm at the tip was used. This procedure was carried out by the same Otolaryngologist and SLP in all cases. A standardized speech sample was used including isolated phonemes, connected speech, automatic speech and sustained fricative phoneme sounds [19]. All procedures were recorded for a thorough further analysis. Size and shape of the gap and velopharyngeal closure pattern during speech were assessed. Ten-percent gaps or bubbling without a discernable gap were considered as small gaps. Gaps larger than 10% but less than 40% were considered as medium size gaps. Gaps larger than 40% were considered as large gaps.

Surgical Procedure

Each surgical procedure for correcting VPI was planned individually according to findings of VNP. In order to prevent postoperative airway obstruction, other factors were also considered for designing the surgical plan, including adenoid and/or tonsil hypertrophy, and nasal septum deviation.

A superiorly base pharyngeal flap would be indicated in cases present with circular or sagittal patterns. The width of the flap was designed to match the maximum displacement of the lateral pharyngeal walls during the production of the speech sample.

A lateral flaps pharyngoplasty would be indicated in cases with a predominantly coronal shape of the gap. Posterior Pharyngeal wall increase using cartilage or fat was used in cases with coronal or circular gaps not greater than 10%.

Post-surgical complications were assessed in all cases.

Speech Therapy Post-Surgery

Postoperative SLP treatment was implemented according with the SLP evaluation which was routinely performed one month after surgery in all cases. Patients with satisfactory outcome of speech and VPF did not receive further treatment. However, they were followed up monthly for a period of 6 months. Patients with postoperative unsatisfactory outcomes as determined by presence of CAD and/or present with incomplete velopharyngeal closure during speech received SLP treatment including 2 modalities: Articulation placement

intervention provided in a 45-minutes session once-per-week and a separate biofeedback 30-minutes session also once-per-week.

The intervention addressing articulation placement and manner was aimed to correct abnormal articulation patterns and carry over adequate articulation into connected speech. Initially, imitations and repetitions strategies were used. Further on, generalization strategies were used in order to enhance carrying over into connected speech. These strategies included reading aloud, singing, conversational speech, and role – play. [16]

Biofeedback therapy included recognition and identification of velopharyngeal structures on the VNP image; analysis of VPS motion during swallowing, blowing and speech; and finally, analysis of VPS motion during the production of oral consonant phonemes with best and worst velopharyngeal closure. Also, during the biofeedback sessions, some of the strategies used during the articulation intervention were also incorporated as velopharyngeal motion was being observed on the screen.

Discharge

The criteria for definite discharge were: normal articulation placement and manner during conversational speech and normal VPF in different speech contexts.

Ethical Aspects

This study was approved by the Ethics Committee of Fundación Gantz. All patients were recruited in this Center. The study was conducted in accordance with the ethical standards of the 1964 Helsinki Declaration. Each patient was carefully briefed about the diagnostic procedures, the surgical procedure that would be performed and the eventual subsequent SLP treatment that would be provided. All patients signed an informed consent before being accepted as participants.

RESULTS

Fourteen surgical procedures were performed. All patients were older than 17 years of age. Seven patients were males and 7 patients were females. Age range was 17 – 35 years of age. Mean age was 24 years of age. No intraoperative or immediate postoperative complications were detected.

All cases studied for this protocol presented with a circular pattern. Thus, all cases were operated on with a superiorly based pharyngeal flap. No other surgical procedure was performed in this series. Three patients were operated on with a narrow flap; six patients were operated on with a medium flap; and 5 patients required a wide flap. The width of the flap was designed to match maximum lateral pharyngeal wall displacement during speech as observed by VNP. (See Table 2).

Table 2. Patient's characteristics and results of the pre and postoperative evaluations

Patients	Age (years)	Cleft Type	Presence of CAD	Preoperative VPI Severity	Preoperative size of the gap (%)	Selected flap width	Postoperative VPI (1 months)	VPI severity after SLP treatment (6 months)	Discharged
1	22	UCLP	Yes	Moderate	20	Medium	Moderate	Without VPI	Yes
2	20	CCP	No	Mild	10	Narrow	Without VPI	-	Yes
3	17	ICP	Yes	Severe	50	Width	Moderate	Without VPI	Yes
4	17	ICP	No	Moderate	30	Medium	Without VPI	-	Yes
5	34	BCLP	Yes	Severe	80	Width	Severe	Mild	No
6	18	UCLP	Yes	Severe	70	Width	Severe	Mild to moderate	No
7	24	BCLP	No	Mild	10	Narrow	Without VPI	-	Yes
8	35	UCLP	Yes	Moderate	40	Medium	Severe	Mild	No
9	23	UCLP	No	Mild	10	Narrow	Without VPI	-	Yes
10	20	CCP	No	Moderate	30	Medium	Without VPI	-	Yes
11	32	CCP	Yes	Moderate	40	Medium	Mild	Without VPI	Yes
12	20	BCLP	No	Moderate	20	Medium	Without VPI	-	Yes
13	26	BCLP	Yes	Severe	80	Width	Severe	Without VPI	Yes
14	23	UCLP	Yes	Severe	80	Width	Severe	Without VPI	Yes

Key: UCLP = unilateral cleft lip and palate, BCLP = bilateral cleft lip and palate, ICP = incomplete cleft palate, CCP = complete cleft palate.

Forty-three percent of the patients studied for this protocol did not show CAD preoperatively. All these cases demonstrated adequate VPF as determined by the SLP assessment one month postoperatively. All these cases did not require any further treatment and were discharged.

The remaining 57% of the cases demonstrated CAD preoperatively. None of these cases were able to achieve adequate VPF one month postoperatively (See Table 2). All these patients underwent further postoperative SLP treatment and biofeedback with VNP. Five out of these 8 cases achieved adequate articulation and VPF after an intervention period of 6 months. Finally, the remaining 3 cases which persisted with inadequate VPF and/or abnormal articulation placement showed mild or moderate hypernasality during spontaneous – connected speech. One of these cases demonstrated a flap with scar tissue which decreased the width of the flap. In this case, by using “forced” articulation placement during the production of isolated words, both ports of the flap looked practically occluded as observed by VNP. However, during spontaneous – connected speech, both lateral pharyngeal walls failed to make tight contact with the lateral – free borders of the flap causing hypernasality and inconsistent nasal emission. Another patient presented with a very narrow flap which could not achieve complete closure not even during the production of isolated words. This case required a new surgical procedure.

Finally, the third patient presented with a flap with an apparent adequate width, good lateral walls motion but it was not possible to achieve a complete seal during connected speech after 6 months of SLP intervention and biofeedback sessions. This patient did not return for a follow up visit in which further surgical treatment would have been discussed. It should be emphasized that these 3 cases with postoperative residual hypernasality and nasal emission demonstrated CAD and a severe VPI preoperatively.

In the overall analysis of the group of patients studied for this chapter, seventy-nine-percent (11 of 14) of the cases achieved a satisfactory outcome following the pharyngeal flap operation and a period not longer than 6 months of postoperative SLP treatment including biofeedback sessions with VNP.

CONCLUSION

The purpose of this chapter was to assess speech and VPF outcome in young adults undergoing surgery aimed to correct VPI.

Poor results have been reported in adult patients who undergo pharyngeal flap surgery [11], hence leading some cleft palate teams to question the implementation of surgery for correcting VPI in this age group. However, a higher success rate (80 - 90%) was reported [20] when general population including children and adults were studied. Another report [8], describes that in young adults, an adequate surgical planning before performing a pharyngeal flap can increase the success rate up to 75%.

The results of this chapter show that 43% of young adults showed improvement of speech and VPF one month following pharyngeal flap surgery. All of these cases were from the Group of patients without CAD. This percentage rose to 79% after SLP intervention aimed to correct CAD including VNP biofeedback.

A relationship between CAD and lateral pharyngeal wall motion has been reported in several papers. [13-14, 16] This could explain why SLP treatment and endoscopic biofeedback increase velopharyngeal closure after a tailor made pharyngeal flap. Moreover, an aberrant lateral walls movements with outward displacement during the production of some fricative phonemes has been reported in cases of CAD [21]. Endoscopic biofeedback seems a safe a reliable tool for correcting this abnormal velopharyngeal motion during speech. In the group of patients studied for this chapter, patients without CAD demonstrated mild VPI with sizes of the gap equal or below 30%. (See Table 2).

It has been reported that endoscopic biofeedback can increase lateral walls motion [22]. Thus, the closure pattern can be modified from a circular pattern into a more sagittal pattern. In the patients studied for this chapter, 5 cases managed to successfully mobilize the lateral pharyngeal walls during speech, resulting in a significant improvement in their speech and VPF. As described by Witzel et al. (1989) [16] some patients have the potential to increase movement of the lateral pharyngeal walls with adequate training. However, it should be pointed out that some of our patients failed to achieve adequate lateral pharyngeal walls motion despite the use of endoscopic biofeedback. Moreover, some of our patients were able to increase motion during the production of isolated words but they were not able to consistently carry over this improvement into conversational speech.

Correction of CAD should consider the use of effective strategies of SLP intervention. In adult patients, the use of biofeedback therapy with VNP seems a valuable tool which can provide a direct visualization of the VPS during speech. Patients undergoing this procedure usually increase awareness of VPS motion which facilitates carrying over the improvement into conversational speech. Also, the integration of auditory and visual inputs effectively decreases total time of the SLP intervention. [23]. Nonetheless, it should be considered that endoscopic biofeedback is an additional tool which should be used as a complement to conventional strategies aimed to correct articulation placement.

When articulation strategies including endoscopic biofeedback are used for 6 months following pharyngeal flap surgery, patients with CAD can achieve similar final outcomes as those of patients who did not present CAD preoperatively.

Adult patients often present with various physical and/or functional alterations in addition to preferences and motivations that are usually related with social aspects and job issues. [12-14] Some patients prefer an intervention for improving communication skills, whereas others are more motivated to improve aesthetic appearance, and dental occlusion. It is important for the cleft palate team to consider the individual needs and points of view of each patient. In the group of patients studied for this chapter, all patients sought treatment by personal motivation and the most common goal was to improve communication.

From the results described in this chapter, it is evident that VPI in young adults should be addressed with a specifically designed treatment plan. Anatomy of the palate, degree of VPI, presence of CAD, size of the defect, and patient motivation should be carefully assessed in each case.

The implementation of the Protocol described herein can provide a better guide for diagnosis and treatment. Thus, an appropriate surgical and SLP intervention plan can be designed, improving final outcome.

From the analysis of the group of young adults studied for this chapter, it seems that those patients present with VPI and CAD who do not show an appropriate motivation for

following the long term management program, cannot be considered good candidates for surgery.

Although the results described for the group of young adults analyzed for this chapter are promising, it will be necessary to study larger groups of patients with different characteristics in order to support the conclusions of this study. It should be emphasized that young adults with appropriate personal motivation for improvement have an acceptable chance for a favorable outcome. However, as mentioned herein, the best results seem to be associated with absence of CAD preoperatively, as well as the presence of small and medium sizes of gap at the VPS during speech.

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Chapter 30

STRATEGIES FOR TREATING PHONOLOGIC DISORDER IN CHILDREN WITH CLEFT PALATE

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ABSTRACT

Children with cleft palate (CCP) may be at risk for articulation disorders. These articulation patterns are known as compensatory articulation disorder (CAD) and are generally regarded as compensatory behaviors secondary to velopharyngeal insufficiency (VPI).

Some authors consider these behaviors as a phonologic disorder.

Whole language principles consider that there is an interaction between the phonological rules and other language rule systems. An articulation problem is far more complex in nature than a phonetic analysis would suggest, and during intervention, phonologic information should not be separated from the other areas of language, such as pragmatics or syntax. Thus, within the same activity, several pieces of information about all areas of language, including phonologic information are provided.

Scaffolding strategies can be useful for correcting placement and manner of articulation. Sometimes, it is difficult to know which strategy would be best option for a specific moment. Few authors have specified the expected time to apply each strategy in order to improve effectiveness. However, when studying the efficacy of these strategies for treating CAD in CCP, some result more adequate depending on the specific stage of speech development or severity of articulation impairment.

In this chapter some scaffolding strategies for phonologic intervention will be described and some ideas for using them in communicative situations in relationship with higher organizational levels of language processing.

Keywords: cleft palate, speech, language, rehabilitation, therapy

INTRODUCTION

Articulation disorders in children may be either phonetic or phonologic in nature. Phonetic disorders are related to inaccurate learning or anatomic, physiologic or/and motor deficits. In contrast, phonologic disorders are considered to be linguistically based and reflect difficulty in the child's organization and representation of the sound system of language. [1 – 3]

Children with cleft palate (CCP) may have an articulation disorder. Certain articulation disorders are generally regarded as compensatory behaviors secondary to velopharyngeal insufficiency (VPI). These errors include dysfunction not only of the velopharyngeal sphincter, but also of the entire vocal tract and higher levels of articulation control in the central nervous system. [4, 5] For example, plosive sounds such as /p/ or /k/ might be attempted by substituting a glottal stop. These abnormal articulation patterns are usually referred as compensatory articulation disorder (CAD). CAD severely affects intelligibility and usually requires a prolonged period of speech therapy. [6, 7]

COMPENSATORY ARTICULATION: PHONETIC OR PHONOLOGIC IN NATURE?

Several authors have described that cleft palate patients are at risk for phonetic based problems due to the structural deviations associated with clefting. [8, 9] However, cleft palate children may be also at risk for phonologic disorders. [10]

A phonetic disorder occurs when the movements of the articulators, such as the lips, tongue, palate, or resonating cavity are altered from a normal or typical production. A compensation such as glottal production or CAD would be considered phonetic, as the child with velopharyngeal insufficiency attempted to produce the sound in an alternative manner to compensate for the inability to establish intraoral air pressure because of the cleft. [10] Because the glottal production reflected an obvious and productive compensation, the problem was viewed as phonetic and articulation became the main topic in intervention. However, only a small or moderate percentage of children with repaired cleft palate exhibit CAD. Most patients, following the repair, produce the more typical pattern and no articulation delays or deviations are seen. [6]

The finding that a small percentage of patients continue to produce CAD despite the early and effective repair of the cleft suggests that some factor other than the inability to establish sufficient intraoral air pressure is contributing to the development and maintenance of this articulatory pattern. Most of the palatal repairs are completed between 12 and 18 months of age, or at the time when first words appear. The appearance of words suggests that by this age children are already establishing a phonological system, or a set of linguistic rules that map the phonetic patterns of speech to the sound and syllable patterns of meaningful language. Thus, what had been a compensatory strategy for approximating sounds heard in the environment during early stages of babbling for some patients becomes incorporated into the phonological rule system before the surgery is completed. Following surgery, when the child is quite capable of producing the plosive sounds or other speech patterns in a more typical manner, the child continues to produce the CAD form because it had become integrated with

the language rules instead of the correct pattern. At this point, what began as a phonetic compensation had become a phonological rule. As a generative and productive rule, the articulatory production would not change until the rule is changed, despite the change in the physical capability to produce the sound correctly.

Evidence for the contention that many of the speech problems of cleft palate children are phonological rather than phonetic can be found in two studies. Chapman in 1993, compared articulation errors produced by children with cleft palate to age-matched and younger groups of typically developing children using a phonological analysis. A phonological analysis examines errors for patterns, such as deleting or modifying sound production patterns according to regularities or "rules." Her findings indicated that children with cleft palate produced the same types of phonological process errors as the younger typically developing children, but they maintained these process errors longer than the age-matched peers. She also found that the children with cleft palate used the phonological process of backing with greater frequency and for more sounds than did the typically developing children. She concluded that these findings suggested that the articulation errors of children with cleft palate were of the same phonological nature as the typically developing children, and that the high occurrence of backing indicated that compensatory gestures had become incorporated into the phonological rules of the subjects. [10]

In the second study, Pamplona et al, in 1999, treated children with CAD following surgery in either a phonetic or a phonological treatment approach. In the phonetic approach children were taught correct production of the error sounds through modeling and reinforcement, using a repetitive drill for a single phoneme until it was mastered. In the phonological condition, multiple errors were targeted simultaneously by focusing on a process, such as producing phonemes in a more frontal position. Thus, three phonemes that had been produced as a glottal stop, such as /k/, /t/, and /p/ were treated simultaneously as sounds requiring more frontal posturing. The phonemes were taught and practiced in a meaningful language context such as storybook reading. Results indicated that while both groups improved their speech, the phonological group achieved normal speech production on average one year sooner than did the phonemic group, which required 2 1/2 years of therapy. Addressing the phonological rules resulted in faster learning of the target productions and more rapid incorporation into the language rules and thus more immediate carryover into conversational speech. [6]

These findings suggest that many of the articulation problems in children with repaired cleft palate currently viewed as phonetic may actually be phonological as early as one year of age. It also implies that during speech assessment and intervention, some additional phonologic analysis and specific strategies should be employed.

Speech intervention in CCP with a phonetic approach considers articulation learning as a specific time of motor learning. Moreover, errors in articulation must be seen as disruptions at some level of the relatively peripheral articulatory processes. Consequently, some therapy procedures are based almost exclusively on the notion that articulation errors are due to faulty control of the articulators. [11, 2] In contrast, in a phonologic approach the children must learn more than just a set of complex articulatory patterns associated with words. They must learn a complete system of phonology. Furthermore, several authors have proposed that some central, cognitive-phonological processing must be included in any description of phonological acquisition. [1, 2]

WHOLE LANGUAGE MODEL. INTEGRATING PHONOLOGY IN A WHOLE

The phonological approach for treating compensatory articulation disorder in cleft palate patients does not necessarily reject well-established principles underlying traditional approaches for articulation disorders. In contrast, articulation must be recognized as a critical aspect of speech sound development under any theory. Consequently, phonological principles should be considered as adding new dimensions and a new perspective to an old problem, not simply as refuting established principles. [2]

Because the phonological system is integrally integrated with the language system, and because faster progress was made when treatment for CAD was more successful when conducted in the meaningful language context of storybook reading, it is also suggested that the language of children with CAD should also be assessed. Hoffman, in 1992, stated that children's speech sound production and perception errors are related not only to phonological knowledge, but also to higher organizational levels of language processing. He also mentions some research findings indicating that children who have difficulty learning phonology also show similar difficulties for learning morphological, syntactic, and semantic regularities of language as well. Hoffman and his colleagues in a series of studies showed that children with phonological disorders made greater progress in both articulation and in language measures such compared to children in treatment approaches that focused on phonological patterns practiced outside of a meaningful language context. [3, 12]

Other researchers have identified language problems in children with cleft palate, including syntax (i.e., grammar), morphology, and vocabulary. [4, 13 – 15]

These findings suggest that many of the language problems actually exhibited by children with CAD may be overlooked when the speech disorder is viewed from a phonetic rather than a phonological perspective. In many cases, there is an interaction between the phonological rules and other language rule systems, so that an articulation problem is really far more complex in nature than a phonetic analysis would suggest.

Pamplona and Ysunza (2000) also found a relationship between CAD and the child's language system, including the ability to use semantic, syntactic, and discourse elements of language rules to express meaning. In this study, they found that children with CAD differ in their overall development of language, and not just speech productions, from children with repaired cleft palates that do not show the CAD speech patterns. These findings suggest that it would be reasonable to provide children with CAD with a more global treatment including linguistic aspects. Treating only the articulation disorders does not seem enough for these patients. It seems more appropriate to consider higher levels of language including abstract thought and reading and writing activities. [16]

For understanding the interaction between CAD and higher levels of language organization we have to consider that children learn language in the context of events such as eating or bathing routines. [12] As they learn the rules, actions and objects are associated with the events, they map words to the visual event. These words would include many levels and descriptions of the ongoing actions and related objects.

Once the words are integrated with the event, they serve to add complexity and abstraction to the internal event structure. Caregivers use language to help the child understand the sequence of the event, as in "we have to wash your hair first. Now let's rinse

the soap out. Then we will get dry". These temporal words have no visual referent. Rather, they are learned by first perceiving a word that has no known meaning to the child. This process of acquiring meaning through context results in the acquisition of abstract language such as interpretations and inferences. [12] It also leads to greater complexity in discourse structures, as the child uses the words to discover temporal and causal links between actions within an event.

In this model, speech productions have an origin independent of the event structure, involving auditory and motor input and output. During infancy, the child's productions increasingly approximate the sounds of the language heard by the child. [18] During this phase, children with cleft palate would use compensatory strategies to best match the output to the input they heard. Children with better-developed event structures would make the transition from prelinguistic sounds productions such as babbling and jargon faster and more efficiently than children with fewer or more impoverished event structures. That is, the event structures have to be present to provide a context for mapping or learning language. These children would map the standard speech produced by others with event. The phonological rule system thus would develop consistent with this adult input. Once children had surgical repair of the palate, their speech productions would change to better match the accurate perceptions and phonological rules.

Children with fewer or more impoverished event structures would continue with prelinguistic sound productions longer. Further, without event structures they would have no context for mapping the speech produced by others with meaning. The compensatory productions would lack a meaningful context for change and therefore would become overlearned motor patterns. As event structures and the concomitant language were acquired, these learned productions would be incorporated into the phonological rule system. That is, the child would continue to match his established speech productions to the adult model. This would result in misperceptions of words and interfere with the processing of higher levels of language, or words learned within the event and linguistic context. CAD should thus contribute to maintaining the language delay. At the same time, the language delay and the incorporations of compensatory productions into the phonological rule system would serve to maintain CAD long after these speech modifications were physiologically necessary.

In fact, the children with CAD frequently demonstrate difficulty with both the event structures and the concomitant language. Many of the children could neither play productively with the toys nor interpret more than the most familiar early events (i.e., bathing) from pictures. Similarly, many times they do not demonstrate elaborated knowledge of events structures in the discourse analysis, marking neither temporal nor causal sequences of actions. Without the development of elaborated and complex event structures, a context for learning the language of interpretations and inferences would not be available. With these principles in mind, some methodologies for language and speech intervention suggest that language and speech should be presented in an integrated manner in order to introduce significant contexts for learning all linguistic elements.

Whole language is a teaching/learning philosophy that recognizes phonetic and phonology as an important component of a whole, assuming that language is indivisible. This teaching philosophy proposes that phonologic information should not be separated from the other areas of language, such as pragmatics or syntax. Thus, within the same activity, all areas of language, including phonology are provided. In this kind of intervention, the production of relevant speech sounds is taught and reinforced within communicative situations. Whole

Language also validates some constructivist principles that guide the evaluation and intervention. [18] These principles suggest that children learn best when:

Language is used to talk about meaningful information and to accomplish purposes that make sense to the child; children are active participants in their own learning, not passive, quite listeners; learning involves repeated opportunities to interact and explore complex information; learning occurs in a context that is sensitive to the needs of individual children and that supports risk taking; language is “whole”; that is, it is presented in a context of meaning and use, not broken up and analyzed in small parts within an artificial setting; children use language to relate to one another and to become socialized as part of culture and community.

Treating only the CAD does not seem enough for these patients. It seems more appropriate to consider higher levels of language including abstract thought and reading and writing activities. In these contexts, phonologic information is integrated with all linguistic areas within communicative purposes and situations. In this order of ideas, the production of speech sounds is not the only goal. The goal is to become effective communicators. In this kind of intervention, the production of relevant speech sounds is taught and reinforced within communicative situations in relationship with higher organizational levels of language processing. [3] The use of abstract and complex levels of language that leads to a coherent and structured discourse can be facilitated in different teaching/learning contexts such as storybook reading. Storybooks are a perfect context for stimulating cognitive and language development in children. [12] Stories have all the elements of the narrative and discourse structure, including the relationships that provide order and structure such as temporality, causality or perspective. Also, they provide stability for seeing those relationships and for working on specific language needs such as articulation patterns of words and/or sounds. Other activities that promote working with speech and language in an integrated way are art, cooking, music or symbolic play.

Pamplona, et al, studied the rehabilitation of children with CAD within naturalistic contexts, following whole language teaching/learning philosophy principles. In this study, it was hypothesized that the most significant change would be concerning the phonologic system. This was not entirely true. Patients from the experimental group, who received therapy according to whole language philosophy, changed dramatically their overall language performance including their phonologic productions. All patients with CAD showed linguistic performance below the expected level according to chronological age. After the intervention period, besides phonologic improvement, children changed dramatically their overall language performance. [19]

STRATEGIES FOR ENHANCING PHONOLOGY

When intervention is based on the phonological principles, some implications for the assessment and management of children with cleft palate may be assumed, including analysis of phonologic processes in addition to phonetic analysis, and the use of facilitation strategies aimed to modify the phonologic system of each child.

The use of strategies seeks to scaffold the child's communicative turns to increase the child's speech and language performance. [3]

These strategies serve to assist the child in formulating messages with greater complexity, specificity of meaning, accuracy, and clarity of expression. Scaffolding strategies consists of various types of prompts, questions, information, restatements, and other procedures that provide support to the child as he/she is actively engaged in the process of communicating a message. [20]

Many phonologists have described specific strategies for facilitating a better way to communicate and/or articulate the sounds of speech. [2, 21] However, few of them have specified the expected time to apply each strategy in order to improve effectiveness. Some of the most common used strategies for are the following: Modeling, [3, 22] Phonemic Cues, [20] Minimal Pairs, [2, 23] Cycles, [21] Imitation and drills, [24] Requests for clarifications, [25] Phonetic changes, [20] and Expansions, [3] among others.

Phonological acquisition is gradual. [21, 26] It is a process. For assessment and intervention, it is important to understand the system of each child, and to recognize in which step of the process is at the moment. A clinical scale of severity of CAD in cleft palate children had been used for this purpose. [27] This scale describes what the child is doing and the difficulty he/she has to manage each specific sound of speech in order to correct placement and manner of articulation. This scale has been useful for understanding the specific moment in the process of each child. It also establishes the degree of severity of CAD in each patient, and facilitates setting intervention goals.

The scale mentioned herein is described as follows:

- *Appropriate articulation.* The patient is able to produce adequate placement and manner of articulation during spontaneous speech, including non-present situations.
- *Inconsistent articulation.* The patient shows compensatory articulation errors inconsistently during spontaneous speech. Intelligibility is not significantly affected
- *Articulation within context.* The patient self-corrects articulation when using speech within a specific context. For example during telling a story from a story book which the patient already knows well. Nonetheless he shows frequent compensatory errors during spontaneous speech.
- *Articulation with strategies.* The patient can correct articulation during isolated words or selected short phrases, only when the clinician uses specific phonologic strategies.
- *Articulation of isolated phonemes.* The patient is able to correct articulation only in isolated phonemes through direct instruction.
- *Constant CAD.* The patient is not able to correct articulation not even in isolated phonemes and despite direct instruction.

Pamplona et al. (2012), studied if some of the strategies commonly used in speech therapy for correcting compensatory articulation errors in children with cleft palate, could be more effective, depending on the degree of severity of CAD. In this study, the following strategies were used during speech therapy sessions: [28]

- A. *Modeling:* Modeling is one of the most reported strategies. The speech pathologist models the speech and/or language behavior that the child is to learn. Some clinicians found that children respond spontaneously if the language behaviors being stressed

are at the child's level. Thus, they model the behavior but do not normally request or formal elicitation. Modeling approaches the normal conditions of language learning more closely than the elicited imitation procedure. [22] Example: Child: “_all he_ (call her)”. Clinician: “Yes, call her”. This strategy has been often described as useful for language development, but it is also proposed as a phonologic strategy. Hoffman states that the models of appropriate articulated words in context are thought to help stimulate appropriate syllabic and phonemic organization. [3] The clinician has the opportunity to model and talk about the phonological structure of words within an overall communicative context. [29]

- B. *Modeling with stress*: With this strategy, the speech pathologist models targeted sounds of speech, but includes a brief pause before the sound and also, a stress on the sounds (phonemes) the clinician wants to model. [28] For example, during a play situation in which a cake is being cut, the child says “_ut the _ae_ (cut the cake); The clinician can respond “yes, (pause)...cut the (pause)...cake. I will (pause)...cut the (pause)...cake and give you a (pause)...piece”.
- C. *Cloze procedure with phonemic cues*: With this strategy, the clinician prompts the child's communicative turn by supplying part of the utterance and letting the child fill the rest. [30] If necessary, the clinician can provide the selected sound of the target word. [20] For example, when reading a storybook, the clinician can say: “Yes, she was hungry, and she found three bowls of sss ____ (soup) on the t t ____ (table)”.
- D. *Phonetic changes*: The speech pathologist indicates that the message would be more easily interpreted with a modification in speech production. [20] For example, when the child says “the _en (the pen)” reading a storybook in which there are different objects, the clinician says: “the pen”. Remember to put your lips together and make an explosion: p p pen”. With this strategy, the information would directly contribute to refining the phonemic distinction being articulated.
- E. *Think aloud in phonemic awareness*: This is a metacognitive strategy where the speech pathologist verbalizes thoughts while reading a selection, thus modeling the process of comprehension. [31] This strategy enables to demonstrate the patient how to select an appropriate articulation process at a specific point in a particular communicative message. The clinician verbalizes specific think-aloud about different levels of Language organization including phonologic information. [28] For example, before reading a storybook, the clinician says: “Let us think which sounds we will be focusing on. We have to consider that some sounds are short and explosive like /k/, /p/, /t/. I will write these letters for reminding us to use them while we refer to the ideas and words of the book. Besides, we have other sounds that are long and continuous: /s/ or /f/. I will write these letters in this other paper. While looking at the storybook, the clinician is focusing on the target sounds and explaining the characteristics of each phoneme and how changing the sound can change the characteristics of the word increasing intelligibility.

For evaluation, all patients were recorded on videotape during speech therapy sessions and the methodology followed is called “narrative-centered themes”. [18] This procedure provides naturally occurring contexts for acquiring world and everyday knowledge. It also serves as a means for addressing children's language and articulation, and allow for an

extended exploration of a general concept. For this purpose, a main topic was chosen, and all activities were structured around this main topic. The goal was to work all linguistic areas in an integrated manner. Thus, articulation goals were always present in an organized whole. Most activities were realized as event representations such as play or storybook reading.

Children were divided in small groups depending on the age, linguistic development, and cognitive level.

All strategies were used within structured activities to provide children with contextually appropriate opportunities to use language and focus on articulation. The speech language pathologist (SLP) could choose either to expand an expression or refine upon an expressed idea by giving specific information, but anyway, SLP made sure that all strategies under study were used with each patient during the sessions.

SLP also used verbal expansions to provide children with information about higher levels of language organization. This type of interaction has been shown to increase the semantic and syntactic complexity of children's utterances, and could have similar effects upon children's phonological productions. [3]

All interactions were video recorded for later transcription and analysis. The examiners quantified the positive changes in articulation elicited by the use of each strategy. Positive changes were considered as the conditions in which the patients were able to approximate or correct appropriate placement or manner of articulation of the phonemes being used. The different strategies were compared in order to determine whether some strategies were more adequate for specific levels of severity of CAD.

Results demonstrated a significant relationship between effectiveness of all strategies and degree of severity of CAD in CCP. All the strategies yielded a significant higher number of positive modifications in articulation in patients classified in the milder levels of the scale, including patients with inconsistent compensatory errors during spontaneous speech and patients who were able to correct articulation within a familiar linguistic context. Moreover, there were a reduced number of positive changes in patients classified in the more severe levels, including patients who were able to correct compensatory errors during the production of words or short sentences, when they were being provided with specific instructions on placement and manner of articulation and patients who were able to correct compensatory errors only during the production of isolated phonemes, through direct instructions.

Hodson, who has largely contributed to the understanding of the phonologic principles in speech assessment and intervention, states that it is important to describe exactly what the child is doing, this allows providing a focus for more efficient remediation procedures. [21] Moreover, in order to achieve an efficient intervention, the SLP has to consider all the communicative emissions of the patient, including subtle changes in his/her speech during the interaction. This will allow the understanding of all linguistic rules interfering with the child's process for correcting articulation.

As a results of the study, strategies that included direct instruction such as phonetic change, cloze procedure with phonemic cues, and/or think aloud in phonemic awareness, appeared to be more effective for promoting positive changes in articulation in patients who were in the higher levels of severity of CAD, such as those who can only articulate correctly isolated phonemes or used them in words or short phrases with the support of the clinician. That is when these strategies were compared with those that do not include direct instruction such as modeling or modeling with stress, a significant difference was observed. However, these two strategies showed similar effectiveness in the lower levels of severity of

articulation. In such levels, children articulate better and are more aware of the use of speech sounds, and show confidence for producing these sounds during a more structured discourse.

It is important to emphasize that modeling is one of the most frequent strategies described. [2, 3, 20] Also, the two strategies that included modeling -modeling and modeling with stress-, were the most common strategies used by the speech pathologists in the study. The results showed that these strategies do not seem to be as effective as the ones that include direct instruction when they are used in children with higher levels of severity of CAD. This finding has important implications for speech intervention. The clinician should consider the characteristics and level of severity of articulation impairment before deciding which strategy should be used.

It should be pointed out, that in the study, for speech intervention, different activities were structured in order to facilitate changes in the phonologic system of each child. Some of them had a structured context such as storybook reading/telling where the text or illustrations provided concrete information with visual cues to refer to. Also, talking about a graphic organizer was considered a structured and present context. In contrast, communicating during symbolic play situations in which the context or situation for playing had to be created with words, or talking about a non-present situation, were considered less structured linguistic context or event, since there were no visual cues supporting communication. In these instances, the individual has to create the whole context through language (decontextualized situation). When the positive changes in articulation elicited by the use of the strategies mentioned above, were compared in more structured and less structured contexts, there seemed to be similar positive changes in both situations. Nonetheless, when the strategies that do not include direct instruction on articulation such as modeling, or modeling with stress were being assessed, there seemed to be a tendency for more positive changes when the strategies were being used in more structured contexts, such as storybook reading / telling. This finding can be explained since these structured situations can provide more contextual or concrete support for communication. This can be especially relevant for the higher levels of severity of CAD, and speech pathologists should consider it for intervention. Moreover, when children with articulation errors are treated, providing visual support is a valuable tool for scaffolding.

In a later study, Pamplona and colleagues studied the efficacy of the strategies for treating CA in CCP. [32] In this occasion they compared two different ways for using scaffolding strategies during intervention in CCP. Both groups received speech therapy aimed to correct compensatory articulation according to the principles of the Whole Language Model where storybook readings were the main context for intervention. Intervention was aimed to reinforce correct speech sounds while enhancing cognitive linguistic organization.

Within these main principles of intervention, in the first group (control group), the SLP used the strategies described before for phonologic intervention. The SLP was instructed that all strategies should be attempted in each case. In contrast, in the second group (experimental group) the SLP used the same phonologic strategies, but they were selected according with the level of severity of CAD as assessed by the scale described herein. [28] (See table 1). When comparing the levels of advance in both groups, a Mann Whitney test showed a significant difference that indicates a greater advance in the experimental group. In conclusion, considering the characteristics of the phonologic system of each child can be useful for facilitating the selection of some strategies, which may be more effective than others in any particular case. Moreover, the dynamics involved in each strategy were

analyzed. Some strategies appeared to be more appropriate for different stages in the natural process of correcting a compensatory articulatory pattern in CCP.

Table 1. Use of strategies according to the level of severity of CAD

Level of articulation	Characteristics of the level The patient:	Strategies
Constant CA	Is not able to correct articulation not even in isolated phonemes and despite direct instruction.	Phonetic changes, Think aloud in PA.
Articulation in isolated phonemes	Is able to correct articulation only in isolated phonemes through direct instruction.	Phonetic changes, Cloze proc with PC, Think aloud in PA
Articulation with strategies	Can correct articulation during isolated words or selected short phrases, only with support of the clinician.	Phonetic changes, Cloze proc with PC, Think aloud in PA, Modeling with stress.
Articulation within context	Self-corrects articulation within a specific context. Shows frequent CA errors during spontaneous speech.	Modeling with stress, Modeling.
Inconsistent articulation	Shows CA errors inconsistently during spontaneous speech.	Modeling with stress, Modeling.
Appropriate articulation	Is able to produce adequate placement and manner of articulation during spontaneous speech.	

The results of these two studies suggest that when speech strategies are used according to the severity of the compensatory articulatory pattern (which is classified depending on the frequency of its appearance during speech and the response to correction prompts), it seems easier for the child to follow the speech pathologist lead in order to correct the pattern.

Patients who are able to produce a correct articulatory pattern only on isolated phonemes or short words, with consistent prompting are more likely to show an effective response to direct instruction on placement and manner of articulation. A possible explanation is that these patients show a limited level of phonologic awareness. In contrast, strategies, which use modeling and modeling with stress seem to be effective in patients with lower degrees of severity of CAD. These patients appear to be more aware of the characteristics of the speech sounds.

It can be concluded that selecting the speech pathology treatment strategies for each case, according with its specific characteristics, including the severity of the articulation disorder, as assessed by its use in conversational speech and the response to prompting, can become a valuable procedure for improving outcome during speech intervention.

INTERVENTION

Considering that language is indivisible, and that learning occurs from whole to part to whole, intervention should treat all areas of language within meaningful contexts according to the child's level of development. These contexts are based in more / less familiar events and allow focusing on the target sounds and language structure or organization.

The intention is to create a natural environment for language learning. The activities have to be carefully designed to be consistent with whole language principles of learning where language is an integral part of every activity. The lessons are organized to help children make sense of complex information while they acquire and use language. This allows CCP to focus on speech and language learning while they do interesting and fun activities.

One strategy is to expose children to a wide variety of books some which include a repeatable and predictable text, others that have great and explicit drawings, and finally, others which challenge listening and critical thinking abilities because of their more complex and abstract story and/or content. It is described that storybooks are great for stimulating cognitive and language development in children. [18] Storybooks have all the elements of the narrative and discourse structure, including the relationships that provide order and structure such as temporality, causality or perspective. Also, the information in the illustrations and the language used in context provide stability for seeing those relationships and for working on specific language needs such as articulation patterns of words and/or sounds. For children with CAD, having both, visual and phonologic information in a simultaneous way can enhance better results. [28]

Other activities that promote working with speech and language are art, play, cooking, and music.

STORYBOOK READING

Strategies

In order to choose the right storybook each child has to be carefully evaluated to get to know his/her linguistic level and phonologic preferences. Knowing the system of each child allows the SLP to interact in an adequate level according to his/her developmental characteristics.

During storybook reading the different aspects of language that required special attention in CCP must be addressed. At the beginning, the story and the illustrations give context for constructing meaning by talking about the actions, characters or sequence of the story. Repeated readings or redundant ideas are useful for understanding and organizing the information as it become familiar. These familiar contexts will facilitate focusing in articulation in a meaningful way while acquiring complex and structured language. In other words, the story is the whole that will allow working with patterns or specific sounds, and then these specific parts will be integrated again in the whole. By modifying the child's internalized rules governing production, the child's speech changes to match this revised category. Because the phonological rule is integrated with other aspects of language, occurrence of correct sounds in spontaneous production is more rapid. [20] The sound does not first have to be learned as a motor production and then generalized to language and spontaneous speech. All areas of language work together as a complex system moving into integration.

Different strategies must be used during storybook reading. These strategies can be used before, during and after reading in order to provide tools for constructing meaning and focusing in specific parts such as the sounds of speech.

Before reading, activating prior knowledge or predicting about the story can help to focus on meaning and start constructing the topic. Also, talking about the target sounds is useful for developing awareness and get ready for articulating during the task.

During the storybook reading two major goals are to be established. First, pay attention to the structure and content of the story for enhancing linguistic organization, and second, to practice and work with the target sounds in articulation. For linguistic organization helping the children to follow the story and make connections, predictions, interpretations or inferences in order to help them see the relationships and conclusions. For articulation, using strategies like the mentioned before or focusing on the target sounds by analyzing words or patterns could help the child to match events with words and sounds for improving articulation and developing phonemic awareness. This would facilitate generalization into connected speech. Finally, after the storybook reading, many activities for responding to the story can be developed such as: use/make graphic organizers for analyzing the narrative structure of the story (beginning, problem, end); analyzing a character or the setting; analyzing feelings, solutions; making art or representing the story or parts of the story. This will allow focusing on articulation as the topic becomes familiar by reading, analyzing and talking about it. During the whole reading, emphasizing the target sounds would allow to hear those sounds in a context of use and develop awareness about their contribution for creating meaning.

Many authors who follow phonologic principles recommend a set of strategies aimed to facilitate changes in phonologic processes. Some of these strategies are based on phonologic development in infants and toddlers. Some of these strategies are to be used during intervention for enhancing stimulation in CCP and CAD. Hodson, in 1991 stated that children with highly unintelligible speech can discriminate others productions, but seem to discount their own auditory feedback signals, even when hearing is judged to be within normal limits. The author suggests providing auditory stimulation during speech therapy sessions for enhancing the development of this ability. [21] This auditory stimulation can be provided if the sounds are stressed and identified during the storybook reading. The purpose is to help the child to rely on auditory feedback and metalinguistic knowledge while following the structure and information of the story and illustrations. In this process, self-monitoring skills are enhanced.

Ingram, studied phonologic development. He described that children learn best the sounds that are necessary to their language, and these sounds are the ones that appears frequently. [26] Modifying linguistic context in order to make the target sounds appear frequently can help children to focus on those sounds and practice articulation while following the plot or event.

CONCLUSION

In conclusion, working articulation within a linguistic whole may be a perfect context for intervention with CCP. Naturalistic contexts such as play or story telling allow for event structures and related language to be examined for semantic context, discourse organization and situational representation while focusing on the sounds of speech.

In these situations, selecting the speech pathology treatment strategies for each case, according with its specific characteristics, including the severity of the articulation disorder, as assessed by its use in conversational speech and the response to prompting, can become a valuable procedure for improving outcome during the speech intervention.

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Chapter 31

PHONETIC AND PHONOLOGICAL DIFFICULTIES ASSOCIATED WITH EXPRESSIVE LANGUAGE IMPAIRMENT IN YOUNG CHILDREN: A REVIEW OF THE LITERATURE

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ABSTRACT

Specific Language Impairment (SLI) occurs in 6.3% of children, twice as much in males than females (Pinborough-Zimmerman et al., 2007). The typical range of prevalence of SLI during the preschool/early school years is between 2% and 8% with an overall median prevalence of 5.95% (National Institute on Deafness and Other Communication Disorders, NIDCD, 2010). SLI involves delays or deficits in expressive or receptive language development, or both (Mursepp, Aibast, Gapeyeva, & Paasuke, 2014). In the case of the expressive language impairment (ELI), children's language is characterized by small vocabularies; short, incomplete sentences; and confusing or disorganized conversations (Mursepp et al., 2014). ELI may involve difficulties with the form of language (phonology, morphology, syntax), the content of language (semantics), and/or the function of language in communication (pragmatics) (American Speech-Language-Hearing Association, ASHA, 1993).

Deficits in phonology may include difficulties with early speech sound production, and/or weak phonological awareness skills (i.e., rhyming, sound isolation, segmentation, and blending), resulting in struggles with reading and writing (ASHA, 2015). Deficits in morphology and syntax may include late use of word combinations, shorter utterances in words with errors often occurring on verbs (especially verb endings, auxiliary verbs, and past tense marking of regular and irregular forms), function words, pronouns, plurals, and later-developing prefixes/suffixes with difficulties in reading and understanding the meaning of words (ASHA, 2015). Impairments in semantics may include poor vocabulary use; word-finding difficulties; using synonyms/antonyms, multiple-meaning words, and figurative language (e.g., idioms, metaphors, proverbs, humor, poetic language); poor organization of narratives and expository discourse that impacts ability to

convey intended meaning (ASHA, 2015). Difficulties in pragmatics may include difficulty expressing ideas, feelings, and personal experiences or difficulty initiating/sustaining conversations (ASHA, 2015).

The purpose of this chapter is to review the most relevant research published that informs the definition, identification, and treatment of expressive language impairment (ELI) in children ages 3 to 10 years, with a focus on phonetic and phonological interventions. Early identification and treatment of ELI is crucial for several reasons. First, the Common Core State Standards Initiative (2015) emphasizes the importance of oral language and learning to read and write. Grade-specific morphological awareness standards begin to appear as early as 1st grade, specifically in the areas of Language Knowledge, Vocabulary, and Reading Phonics/Word Recognition (Smith Gabig & Zaretsky, 2013). Second, adequate phoneme awareness appears critical to speech production and early reading success for children with speech impairment (Macrae & Tyler, 2014; Nathan, Stackhouse, Goulondris, & Snowling, 2004; Rvachew, Nowak, & Cloutier, G., 2004).

Targeted areas of intervention for expressive language deficits (ages 3 to 10) include but are not limited to phonological interventions such as increasing consonant repertoire, decreasing the use of phonological processes (e.g., final consonant deletion, fronting), and enhancing phonological awareness skills (e.g., rhyming, blending, segmenting, and elision) (ASHA, 2015). Timely implementation of such interventions, wherever the existing language skills may be on the expressive communication continuum, will benefit children's short-term as well as long-term language, literacy, and social-emotional skills (Greenwood et al., 2013; Hawa & Spanoudis, 2014; Poll & Miller, 2013; O'Hare, 2013).

1. INTRODUCTION

1.1. Specific Language Impairment with a Focus on Expressive Language Deficits: Definition and Prevalence

Expressive language deficits in children can lead to multiple diagnoses, since the terminology in the field that relates to language disorders is mixed. Similar symptoms that characterize significant delays in expressive language abilities can either be classified under a type of Specific Language Impairment (SLI) (Tomblin et al., 1997), or, they can be presented as evidence that an individual is affected by a "language disorder" (American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders, DSM-V, 2013). Specific language impairment (SLI) is a form of developmental language impairment in which children demonstrate age inappropriate difficulties with the acquisition of language (Tomblin et al., 1997). SLI involves delays or deficits in multiple language domains (i.e., expressive language, receptive language, or both), in the absence of observed mental retardation, nonverbal cognitive deficits, neurological and sensorimotor deficits, hearing loss, and environmental deprivation (Muursepp et al., 2014; Leonard, 1998). Schwartz (2009) defined SLI as an impairment of language comprehension, language production, or both, in the absence of hearing impairment, general developmental delay, neurological impairment, or autism spectrum disorder. Children with SLI may have deficits in different language skills (e.g., phonology, morphology, syntax, semantics, and pragmatics) (Tomblin et al., 1997; Schwartz, 2009). Many children with SLI demonstrate deficits in vocabulary development,

such as late talking, having a smaller and less varied vocabulary size, and word finding and learning problems, in general (Leonard & Deevy, 2004). Vocabulary development deficits (i.e., lexical acquisition deficits) are strongly associated with oral and written language development and thus, particularly devastating for young children's social communication skills (Catts, Fey, Tomblin, & Zhang, 2002; NICHD Early Child Care Research Network, 2005). The first purpose of this chapter is to define expressive language impairment, and review the most relevant research evidence that informs the identification and treatment of expressive language deficits in young children (ages 3 to 10). The second purpose of this chapter is to review the role of phonetics and phonology and related aspects (e.g., vocabulary, morphology, syntax) in expressive language deficits in children, and implications of the intervention research for clinical and educational practice (e.g., speech/language therapy, curriculum development, teacher training, etc.).

Impairment and disorder are terms that are used interchangeably in the literature (Greenwood et al., 2013; NIDCD, 2015). Language disorder, in general, is defined as a communication disorder characterized by persistent difficulties in the acquisition and use of language across modalities (APA, DSM-V, 2013; ASHA, 1993 & 2015). According to DSM-V (i.e., Language Disorder, diagnostic criteria, 315.39, F80.9), language disorder is associated with reduced vocabulary, word knowledge as well as word use; limited sentence structure due to grammatical and morphological deficits; and impairments in discourse such as the ability to use vocabulary and connect sentences to have a conversation, or to explain/describe a topic or series of events. According to the guidelines provided by ASHA (1993, 2015), a language disorder is impaired comprehension and/or use of spoken, written, and/or other symbol systems. The disorder may involve deficits with the form of language (phonology, morphology, syntax), content of language (semantics), and the function of language in communication (pragmatics). Language disorders usually affect vocabulary and grammar, which then limit the capacity for discourse (APA, DSM-V, 2013). Expressive ability, specifically, refers to the production of vocal, gestural, or verbal signals (APA, DSM-V, 2013).

While no clear statistics are available, to our knowledge, regarding the prevalence of expressive language impairment in young children, most statistics are provided on the prevalence of communication disorders or specific language impairment in general (O'Hare, 2013; Pinborough-Zimmerman et al., 2007; Tomblin et al., 1997). O'Hare (2013) reports that communication disorders of preschool children affect 5-8% of those aged between 2 and 4.5 years. The findings of Pinborough-Zimmerman et al. (2007) within a very large sample, approximately thirty thousand children, showed that communication disorders occurred in 6.3% of 8-year-old children. Tomblin et al. (1997) reported that SLI impacts approximately 7% of monolingual 5-to-6-year-old children. Other statistics within younger children show that approximately 15% of children at age 2 present slow onset and progression of expressive language (Desmarais, Sylvestre, Meyer, Bairati, & Rouleau, 2008; Horwitz et al., 2003; Hawa & Spanoudis, 2014). In 18- to 23-month-old toddlers, the percentage of late talkers is estimated to be around 13.5% whereas in 30-36 month-old toddlers the rate rises to 17.5% (Horwitz et al., 2003).

1.2. The Correlates of Expressive Language Impairment and Rationale for Their Study in Relation to Other Language Domains

Language impairments in children may co-occur with other communication disorders (Macrae & Tyler, 2014). For example, children with language impairments may have a co-occurring speech sound disorder (SSD), which is the most common communication disorder type on pediatric speech-language pathologists' caseload (Broomfield & Dodd, 2004; Tyler, Lewis, Haskill, & Tolbert, 2003). Statistics show that 50%-75% of preschool children with speech sound disorders and approximately 14% of 6-year old children with speech sound disorders have a co-occurring language impairment (Shriberg & Kwiatkowski, 1994; Shriberg, Tomblin, & McSweeney, 1999). In comparison with children with SSD alone, children with co-occurring SSD and language impairments have been shown to exhibit poorer auditory discrimination (Nathan, et al., 2004), phonological awareness (Nathan et al., 2004), phonological memory (Lewis et al., 2011; Sices, Taylor, Freebairn, Hansen, & Lewis, 2007), vocabulary (Lewis et al., 2011), narrative abilities (Wellman et al., 2011), and less developed reading, spelling and written language skills (Nathan et al., 2004; Macrae & Tyler, 2014).

Children with co-occurring SSD and language impairments may be diagnosed with a more severe SSD than children with SSD only (Sices et al., 2007). These children may also show differences in the error patterns they use (Macrae & Tyler, 2014). Errors patterns, also referred to as *phonological processes*, were described in theory of natural phonology as reflecting "mental substitutions which systematically but subconsciously adapt phonological intentions to phonetic capacities" (Donegan & Stampe, 1979, p.126; Macrae & Tyler, 2014). According to Stampe (1969), infants' first words likely reflect the full range of these phonetic restrictions on speech output. As children are exposed more and more to the adult forms, they gradually suppress these patterns so that their word productions match the adult form. Children who fail to suppress the error patterns may be diagnosed with SSD.

Two types of speech error patterns that reflect distinct underlying deficits in children with SSD are *atypical error patterns* (i.e., simplifications that are not used by children with typical phonological development) and *omission error patterns* (i.e., omission of a syllable or phoneme; weak syllable deletion, final consonant deletion, cluster reduction). Atypical error patterns reflect poor phonological processing skills and weak underlying phonological representations (Leitao, Hogben, & Fletcher, 1997; Preston & Edwards, 2010). Phonological processing includes specific operations such as encoding, storage, retrieval, production, and explicit awareness of speech sounds (Leitao et al., 1997). Omission error patterns may reflect an underlying cognitive-linguistic processing deficit in children with SSD (Shriberg et al., 2005). The argument is that frequent use of omission patterns is consistent with a genetically transmitted cognitive-linguistic processing deficit, while substitutions and distortions indicate at least partial underlying knowledge of the target phoneme, and phoneme deletions may indicate lack of phonological representation of the targets (i.e., to be able to appropriately encode, store, and retrieve them) (Shriberg et al., 2005). In a study by Macrae and Tyler (2014), within a sample of young children ages 3 to 5 years, children with co-occurring SSD and language impairments showed different types of speech error patterns than children with SSD only. More frequent use of omission error patterns and less frequent use of distortion error patterns were observed within children with co-occurring SSD and language impairments. This finding supported Shriberg et al. (2005) conclusions that frequent omission

pattern use may be associated with a more compromised linguistic system characterized by absent phonological representations for target sounds.

In sum, the speech of children with co-occurring SSD and language impairments may be characterized by several error patterns, including omission, distortion, typical and atypical error patterns (Macrae & Tyler, 2014). Frequent use of atypical patterns is associated with poor phonological awareness skills, and poor reading and spelling skills, and therefore has been linked to a phonological processing deficit (Macrae & Tyler, 2014). Omission patterns, on the other hand, are assumed to reflect absent phonological representations for target sounds and perhaps a more global cognitive-linguistic processing deficit in contrast to atypical patterns (Macrae & Tyler, 2014).

While language impairment may co-occur with speech sound disorders (Broomfield & Dodd, 2004), several studies have shown that SLI is linked to slow processing speed (Leonard, 1998; Chen & Liu, 2014), and abnormalities in the brain structures involved in procedural memory, such as Broca's area, the basal ganglia, the supplementary motor area (SMA), and the cerebellum (Gauger, Lombardino, & Leonard, 1997; Tallal, Jernigan, & Trauner, 1994; Ullman, 2004; Vargha-Khadem et al., 1998). Given the comorbidity of expressive language impairment with other communication disorders and the link between SLI and structural abnormalities in the brain (Marini, Tavano & Fabbro, 2008), it becomes even more crucial to study aspects of language impairment, theories that explain the potential causes of SLI, and interventions developed to treat the symptoms.

There are two major traditional theories of SLI that demand attention (Evans, 2001). Competence-based theories of SLI are based on the assumption that language impairments seen in children with SLI are the result of incomplete knowledge, missing rules, principles, or incomplete linguistic constraints (Gopnik, 1990; Gopnik & Crago, 1991; Rice & Wexler, 1995). Performance-based accounts of SLI, in contrast, are based on the assumption that the language impairments in children with SLI are secondary to nonlinguistic processing impairments (Evans, 2001). Several processing-based accounts of SLI, for example, assume that "general processing capacity limitations" can account for the greater weaknesses in grammatical morphology seen in children with SLI (e.g., Bishop, 1997; Leonard, 1998).

In addition to "general processing deficit" accounts of SLI, other processing-based accounts of SLI assume a deficit in a "specific processing mechanism" that secondarily affects the language system more broadly. For example, Gathercole and Baddeley (1990) have argued that a deficit in the child's ability to store phonological information in working memory is responsible for the lexical deficits seen in children with SLI. Alternatively, Tallal et al. (1996) argue that SLI is not due to deficits in phonological memory, but, due to deficits in temporal processing. They argue that an inability to process rapidly changing aspects of the acoustic signal results in the language problems exhibited in children with SLI (Tallal et al., 1996).

In the early 2000s, an alternative view of SLI proposed that the contributions of both the child and the environment create a multi-dimensional system of interacting components (Evans, 2001). From this alternative perspective, the distinction between competence and performance disappears, and an emergent account of SLI predicts that changes in extrinsic contextual demands will result in changes of the language behaviors that children exhibit (Evans, 2001). According to this dynamic view, under certain circumstances, the child's language behavior will be stable and predictable, and under other conditions, it will be highly

variable, such that moment-to-moment variability will be displayed based on changes in external contextual demands (Evans, 2001).

Given the comorbidity of SLI with other language disorders (Macrae & Tyler, 2014), and the different theories on specific language impairments that attempt to discover the underlying causes of SLI (Evans, 2001; Gathercole & Baddeley, 1990; Tallal et al., 1996; Leonard, 1998), the further study of the types of SLI and influences of SLI on child development is warranted. In this chapter, we will be reviewing phonetic, phonological, syntactic, morphological, and pragmatic influences in expressive language impairment and example interventions designed for young children to improve their expressive language skills.

2. PHONETIC AND PHONOLOGICAL UNDERPINNINGS OF EXPRESSIVE LANGUAGE IMPAIRMENT

The terms phonetics, phonology, phonological processes, and phonemic awareness are inter-related (Carr, 2013). Phonetics is defined as the study of the nature, production, and perception of the sounds of speech, often without prior knowledge of the language being spoken (Matthews, 1997; Hawkins, 2003; Carr, 2013). More specifically, *phonetics* is the term for the description and classification of speech sounds, particularly how sounds are physically produced, transmitted and received (Hamann & Schmitz, 2005). English has 20 different vowels, and these vowels are all written by different combinations of 6 different letters, "a, e, i, o, u, y" (Hamann & Schmitz, 2005). For example, the orthographic spelling of a word (e.g., *please*) is different than the phonetic transcription that is placed between square brackets [pli:z]. Thus, the word *please* consists of three consonants, [p, l, z], and one vowel, [i:], and sounds are put between slashes (Hamann & Schmitz, 2005).

Phonology is defined as the study of the sound system of a language and the rules that govern the sound combinations (ASHA, 1993; Matthews, 1997; Carr, 2013). Thus, phonology is concerned with how sounds function in relation to each other in a language (Hamann & Schmitz, 2005). In other words, while phonetics is about physical aspects of the sounds in a language, phonology is about sound systems of a language, and phonetics is a descriptive tool necessary to study the phonological aspects of a language (Hamann & Schmitz, 2005; Clark, Yallop, & Fletcher, 2007). There are many examples to the study of phonology, since the organization of sounds can be accomplished in many ways (Clark et al., 2007). A *phoneme* is the smallest unit in the sound system of a language that can change the meaning of words; for example, the /t/ sound in the word *tile* differentiates it from the word *file* (Hamann & Schmitz, 2005). Another classification of sounds is the use of minimal pairs. *Minimal pairs* are two words with meanings that are dissimilar from each other but have the same sounds in the same place in each word, except for one different sound such as *cat/sat*, *pin/bin*, or *tub/hub* (Clark et al., 2007). Punctuation marks for phonemic and phonetic transcriptions of words differ. For example, while phonemically, the words *bead* and *bean* are transcribed as /bid/ and /bin/, phonetically, they are transcribed to be pronounced as [bid] and [bin] (Johnson, 2011).

Phonological processing is essential for a wide range of skills (Vandewalle, Boets, Ghesquiere, & Zink, 2012). It involves the representation, manipulation, short-term storage,

and retrieval of speech sounds (Snowling, 2000; Wagner & Torgesen, 1987). Beckman and Edwards (2000) characterized phonological development as a gradual accumulation of knowledge in the perceptual and articulatory domains. Phonological awareness refers to the knowledge that spoken words can be segmented into smaller abstract units (e.g., syllables, phonemes), and is assessed by various tasks that measure the ability to distinguish and manipulate these syllables or phonemes such as phoneme deletion tasks (Yopp, 1988; Wagner, Torgesen, & Rashotte, 1999). Phonological awareness is an important preliteracy skill and one of the best predictors of success in reading acquisition (Torgeson, Wagner, & Rashotte, 1994). It has been shown that children with phonological delay have significant difficulties in the completion of phonological awareness tasks, especially during preschool years (Bird, Bishop, & Freeman, 1995; Larrivee & Catts, 1999; Rvachew, Ohberg, Grawburg, & Heyding, 2003). These difficulties include but are not limited to tapping out the number of syllables or phonemes in a word (Webster & Plante, 1992), matching words that share an onset or rime (Bird et al., 1995; Rvachew et al., 2003), and deleting syllables or phonemes from words (Larrivee & Catts, 1999).

Several models have been developed that guided the study of phonological awareness (Swan & Goswami, 1997; Treiman & Zukowski, 1996). Swan and Goswami (1997) proposed that poor phonological awareness skills arise from deficiencies in both the precision of phonological specification of the underlying representations and the segmental organization of these representations. Treiman and Zukowski (1996) presented a developmental model for the study of phonological awareness skills. In their model, different aspects of phonological awareness develop at different phases within typically developing children. Initial ability is learning the skill to segment speech into words. This is followed by the ability to divide words into syllables, and then, to divide syllables into intrasyllabic components, and finally, intrasyllabic units into phonemes. The expectation is that segmentation at the syllable level will be easier than segmentation at the intrasyllabic level, which will, in turn, be easier than segmentation at the phoneme level (Treiman & Zukowski, 1996). This developmental trend was observed in a cross-sectional study within typically developing children, while it could not be confirmed in young children with SLI whose language abilities were followed from preschool to kindergarten and first grade (Thatcher, 2010). Children with SLI exhibited no significant improvement in their ability to segment at the various levels. It was argued that the generally decreased phonological awareness abilities may explain the lack of improvement in segmentation skills over time in children with SLI (Thatcher, 2010).

Earlier studies are in line with the arguments presented in Treiman and Zukowski's model (1996) such that a gradual increase in the amount of phonetic detail that is encoded in phonological representations occurs alongside developmental changes in the structure of these representations. Thus, children's representations become increasingly segmental in nature (Jusczyk, 1992; Nittrouer & Studdert-Kennedy, 1987). For example, Jusczyk (1992) has shown that infants perceive speech in terms of syllables rather than individual segments. Nittrouer and Studdert-Kennedy (1987) showed that 3- to 5-year-old children are more sensitive than adults to formant transitions when identifying fricative-vowel syllables. In contrast, adults attend more to the acoustic cues that are associated with the individual segments rather than to the syllable as a whole. With time, phonological representations are restructured to reflect a segmental ordering of individual phonemes, and children segment words into increasingly smaller units as they get older, starting with the word and syllable segmentation during preschool, progressing through onset-rime segmentation during

kindergarten, and ending with the segmentation of individual phonemes in grade school (Treiman & Zukowski, 1996). The child's gradually increasing perceptual knowledge about phonemes are linked to improvements in the accuracy and stability of articulation as the child adjusts his/her speech production to match the acoustic/phonetic characteristics of the native language speech-sound categories (Macken & Barton, 1980).

Developmental studies show that when toddlers begin to encode phonological representations of words in their lexicon, these phonological representations are lacking in phonetic detail (Werker, Fennell, Corcoran, & Stager, 2002). Children's ability to encode the fine phonetic detail of speech improves gradually, most likely as a consequence of repeated exposure to words and the challenging task of trying to organize their rapidly growing lexicon (Rvachew et al., 2004). For example, in a study with 3- to 7-year-old children and adults, both groups were asked to identify words that contrasted word-final stop consonants (Edwards, Fox, & Rogers, 2002). Results showed that preschoolers required more acoustic information than adults and older children to be able to recognize words accurately (Edwards et al., 2002). Findings from several studies supported the existence of a reciprocal relationship between perceptual encoding and vocabulary growth (Werker et al., 2002; Edwards et al., 2002). It was argued that the ability to encode fine phonetic detail permits the expansion of children's vocabulary, and in turn, the size and structure of the lexicon impacts the way in which speech is perceived (Edwards, Beckman, & Munson, 2004).

Children with SLI also exhibit novel word-learning deficits compared to their age-matched peers (Chen & Liu, 2014). Mandarin-speaking preschool children with SLI were exposed to novel words for unfamiliar objects, and word learning tasks included initial mapping and short-term repetitive learning (Chen & Liu, 2014). Results revealed that preschoolers with SLI performed as well as their age-peers in the initial form-meaning mapping task, while their word-learning difficulty was shown in the short-term repetitive learning task under a production demand, and their learning speed was slower than the control group (Chen & Liu, 2014). It was concluded that the word-learning difficulty in children with SLI occurred in the process of establishing a phonological representation, at the "beginning stage" of word learning (Chen & Liu, 2014).

In sum, phonetic skills and phonological knowledge are inextricably linked in development, and simultaneously implicated in children's language skills (Rvachew et al., 2004). Understanding the developmental progression of phonetic and phonological skills has research implications as well as clinical benefits (Rvachew et al., 2004).

3. THE INTERPLAY BETWEEN PHONOLOGY, MORPHOLOGY, PROSODY, SYNTAX, AND RELATIONS TO EXPRESSIVE LANGUAGE DEFICITS

Imprecise phonological representations (e.g., phonological representations of words) are associated with deficits in phonological awareness (Rvachew et al., 2004). It is proposed that the quality and precision of any given underlying representation will depend on children's access to a large set of stored exemplars (e.g., sufficient input), the ability of the children's auditory and linguistic systems to encode the acoustic/phonetic information contained in the input received, and the children's tendency to attend to and encode most relevant aspects of

that input (Rvachew et. al., 2004). While the interplay between phonetics, phonology, and phonological awareness is well established (Rvachew et. al., 2004), phonology is associated with other aspects of language that inform children's skills (e.g., morphology, prosody, syntax).

Inkelas (2014) reports that phonology and morphology are conceptualized as distinct modules, but they are constantly intermingled. In every language, at least some of the phonological patterns are conditioned by morphological factors and predicting the form of a morphologically complex word requires knowledge of the phonological rules of the language (Inkelas, 2014). Research has shown that studying the interplay between morphology and phonology demonstrates more about each phenomenon in relation to each other than studying them in isolation (Inkelas, 2014; Ajiboye, Dechaine, Gick, & Pulleyblank, 2011).

Morphological knowledge and awareness are intrinsically related constructs (Smith Gabig & Zaretsky, 2013). *Morphemes* are the smallest meaningful units in a language (Smith Gabig & Zaretsky, 2013). Morphological awareness is defined as the metalinguistic ability to recognize, reflect on, and manipulate the smaller meaningful parts of language such as prefixes (e.g., *re-*), base words/roots (e.g., *cycle*), and suffixes (e.g., *-ing*, *-ist*), to develop words that are morphologically complex (e.g., *recycle*, *cycling*, *recycling*, *cyclist*) (Wolter & Pike, 2015). The study of such sub-lexical word structures (i.e., roots, prefixes, suffixes) is the basis of morphological awareness (Smith Gabig & Zaretsky, 2013). Explicit morphological awareness is evident when individuals are able to analyze the word structures and word meaning, including the process of word formation and the semantic relationship among sub-lexical parts of words (Berninger, Abbot, Nagy, & Carlisle, 2010), the morpho-phonological properties of words influencing stress patterns and word pronunciation (Jarmulowicz & Hay, 2009), and a word's fit into syntactic frames (Stolz & Feldman, 1995). The weaknesses in morphological awareness appear consistent with the difficulties using the phonological information to decode (Kirk & Gillon, 2007). For example, Song, Sundara, and Demuth (2009) demonstrated phonological constraints on children's morphology. The results of their study provided strong support for the role of phonological complexity in explaining some of the variability in children's production of third person singular morpheme *-s* (Song et al. 2009). Findings showed that children produced third person singular morphemes more accurately in phonologically simple coda contexts as compared with complex coda (Song et al., 2009).

While the interrelationships between phonology and morphology inform language skills (Song et al., 2009), there are other key components involved in speech/language development. For example, prosody is an important concept to define and examine, since children use prosodic cues in their language production (Wagner & Watson, 2010). The acoustic-phonetic properties of an utterance that "vary independently of its lexical items" are characterized by the term "prosody" (Wagner & Watson, 2010). Acoustic realization of each acoustic-phonetic property has a perceptual and a temporal correlate (Kreiner & Eviatar, 2014). Fundamental frequency is perceived as pitch, and intensity is perceived as loudness, and prosody is defined as the patterns of variation in these properties (Kreiner & Eviatar, 2014). The term intonation refers to changes in pitch over a phrase, sentence, or utterance, such as the pitch-rise property of questions in English (Kreiner & Eviatar, 2014). More complex prosodic percepts, such as stress emphasis, pitch accenting, intonational breaks, and rhythmic patterns are generated by synchronized co-variation of various acoustic properties

(Kreiner & Eviatar, 2014). Thus, prosody refers to the structural patterns of acoustic variations over time (Kreiner & Eviatar, 2014).

Infants use prosodic cues as signals of different linguistic properties (Johnson & Jusczyk, 2001; Jusczyk et al., 1992; Speer & Ito, 2009). For example, Johnson and Jusczyk (2001) show that 8-month-old infants use stress patterns as a cue for segmenting the speech stream into words, and 9-month-olds prefer passages where the prosodic break corresponds to the major syntactic break in comparison to the passages where prosodic and syntactic breaks mismatch (Jusczyk et al., 1992). More specifically, infants use pre-linguistic prosodic cues as an organizational device that helps them to segment the continuous speech stream and notice different linguistic properties (Speer & Ito, 2009). Speer and Ito (2009) suggest that children use prosodic phrasal structure as a “proto-syntax” that serves as the basis for later language acquisition.

In older children and adults, prosody plays a central role in both comprehension and production of spoken language (Kreiner & Eviatar, 2014; Wagner & Watson, 2010). In production, most research has focused on the correspondence between prosodic boundaries and syntactic structures (Kreiner & Eviatar, 2014). For example, the number and positions of pauses in an utterance are roughly correlated with the number and positions of syntactic phrase boundaries (Selkirk, 1984) and the duration of pauses is correlated with the strength of the syntactic boundaries (Grosjean, Grosjean, & Lane, 1979). In a relatively recent review by Ladd (2008), the variety of different prosodic features that the speakers produced were associated with the boundaries and syntactic constituents (e.g., lengthening of the pre-boundary syllables, a “reset” of intonation to its base pitch) (Byrd, Krivokapic, & Lee, 2006; de Pijper & Sanderman, 1994). The rich and complex array of prosodic cues signal different aspects of syntactic structure, while also facilitating cognitive processing involved in language processing (Kreiner & Eviatar, 2014). Prosodic representation serves as a multi-layered map indexing items across different representations (i.e., phonological, syntactic, semantic), while the utterance is being processed (Frazier, Carlson, & Clifton, 2006).

In addition to phonology, morphology, and the use of prosodic cues, syntactic abilities inform children’s expressive language skills (Contemori & Garraffa, 2010). For example, in the context of morphology, syntactic knowledge assumes the understanding of the grammatical role of affix when assigning word meaning (Nunes & Bryant, 2006). As children gain more experience with complex words containing derivational and/or grammatical affixes, they acquire faster recognition and more nuanced understanding of the different morpheme types, and their grammatical functions (Smith Gabig & Zaretsky, 2013).

Sentence construction is a more advanced grammatical skill (Contemori & Garraffa, 2010). Several studies have described difficulties with respect to producing syntactically complex sentences that the children with SLI experience (Contemori & Garraffa, 2010; Hakansson & Hansson, 2000; Jakubowicz, 2003). For example, in a study with preschool children with SLI (ages 4 to 6), the children’s comprehension ability was found to be comparable to age-matched peers, while their production showed a wider range of variation, and the preschoolers with SLI were unable to construct any relative clause (Contemori & Garraffa, 2010). Jakubowicz (2003) found that like typically developing children, children with SLI had longer response times in comprehension tasks when the determiner-noun or the subject-verb agreement was incorrect. However, production tasks showed that children with SLI made verb tense omissions (around 25% of the time), not observed in typically developing controls (Jakubowicz, 2003). It was concluded that children with SLI are sensitive

to violations in comprehension just like the typically developing children, while they exhibit difficulties with production unlike their typically developing peers (Jakubowicz, 2003). In an earlier study by Hakansson and Hansson (2000), the comprehension and production abilities of young children with SLI (ages 4 to 6) with a main expressive language impairment were longitudinally examined. Even though the performance of children with SLI and the control participants was comparable in the comprehension task, production by the two groups differed significantly at both Time 1 and Time 2 (Hakansson & Hansson, 2000).

Phonological, morphological, and syntactic abilities, and the use of prosodic cues are among the skill-sets needed for successful development of expressive language skills (Smith Gabig & Zaretsky, 2013). Several interventions exist that have been designed to treat difficulties in expressive language, including but not limited to the treatment of expressive phonological delays, and expressive vocabulary delays (Rvachew et al., 2004).

4. COMMONLY USED INTERVENTIONS TO TREAT EXPRESSIVE LANGUAGE IMPAIRMENT

4.1. Phonetic Perception and Phonological Processes

Different kinds of interventions have been shown to result in significant behavioral and neural gains in individuals with language-related deficits. For example, while the research literature is mixed regarding the benefits of FastForWord, several studies have shown the remedial gains of phonological training using this program, including improvements in auditory discrimination, phonic match, phonic word, understanding instructions, and grammatical structures and rules (Gillam et al., 2008; Strong, Torgerson, Torgerson, & Hulme, 2011; Ylinen & Kujala, 2015). Among other interventions used to treat children with phonological processing and phonemic awareness difficulties are Lindamood-Bell Programs (Bell, 2015), Lindamood Phoneme Sequencing Program for Reading, Spelling, and Speech (LIPS) (Lindamood & Lindamood, 2011), and Earobics, a powerful multisensory reading intervention for children attending Pre-K through 3rd grade (Houghton Mifflin Harcourt, 2014). Interventions conducted with individuals with SLI also showed strengthening of oscillatory brain activity (Heim, Keil, Choudhury, Friedman, & Benasich, 2013), and auditory cortical responses (Pihko et al., 2007; Stevens, Fanning, Coch, Sanders, & Neville, 2008).

Phonetic skills and phonological knowledge are interrelated and both associated with phonological disorders (Rvachew et al., 2004). This perspective provides a justification for situating the speech/language therapy practices at the intersection of phonetic and phonological skills (Rvachew et al., 2004). Stimulability has been used as an assessment strategy to evaluate whether a child can perform certain tasks given certain antecedents and supports, and the use of this assessment method has been established as a reliable predictor of phoneme acquisition in spontaneous speech (Miccio, Elbert, & Forrest, 1999). In addition, it has been shown that the use of phonetic placement to ensure stimulability for target phonemes improves the success of phonological interventions (Powell, Elbert, Miccio, Strike-Roussos, & Brasseur, 1998; Rvachew, Rafaat, & Martin, 1999).

Word-learning interventions may help develop children's expressive language abilities, since they provide them with a more established vocabulary set that can be used during

communication (Chen & Liu, 2014; Kelley, Goldstein, Spencer, & Sherman, 2015). In experiments that test fast-mapping in children with SLI, children are usually presented with novel words that are embedded in sentences within a certain context (e.g., a play session) in which novel objects are marked by these novel words. Children's ability to comprehend or produce the target words is then tested. During the comprehension tasks, children are usually asked to select the corresponding object when they hear the novel word stimuli (e.g., by the help of a picture or a real object) (Chen & Liu, 2014). To test children's production of the novel word, a word naming task is usually used (Chen & Liu, 2014).

In an earlier study, children with SLI were instructed to fast map one novel word, and results showed that preschoolers with SLI comprehended the single novel word as well as their age-matched peers, however, they produced fewer of the words' phonemes than children with typical language development (Dollaghan, 1987). This suggests that for children with SLI, the phonological representation of a novel word may be sufficient to distinguish the words from alternative options during the comprehension tasks (Dollaghan, 1987). However, in children with SLI, the stronger and more complete representation that is required to fulfill the production task is not usually established (Dollaghan, 1987).

Based on the clinical need, an instructional component was also established that was embedded within the vocabulary intervention programs (Chen & Liu, 2014). The word-learning process was examined with "supported learning contexts" (SLC) provided (Gray, 2005, 2006; Gray & Brinkley, 2011). SLC word-learning tasks involve more modeling, prompts, and feedback by adults after the fast-mapping tasks (Kiernan & Gray, 1998). Results from the studies that used the SLC paradigm showed that children with SLI performed more poorly than their age-matched counterparts at novel word comprehension and production beyond the initial fast-mapping stage, since, in general, they learned fewer words, and required more trials to achieve the learning criterion (Chen & Liu, 2014).

Another paradigm to investigate word-learning ability was named the "quick incidental learning" (QUIL) paradigm, developed by Rice, Buhr, and Nemeth (1990). In the QUIL paradigm, new words are used to replace common but general labels. For example, "conduit" replaces a word like "hose" in a garden story. The words are embedded in a sentence and presented in an animated story. Children watch the video without prior notice of the word-learning task. After the video, they are asked to select the corresponding picture from four pictures when presented with a target word to assess their comprehension of the new words. Similar to the typical fast mapping studies, QUIL studies test the initial form-meaning mapping ability. However, the QUIL paradigm emphasizes the incidental nature of the linguistic context of learning support (Rice, Buhr, & Oetting, 1992). Results of QUIL experiments showed that children with SLI retained significantly fewer words than typically developing children matched by chronological age or by mean length utterance (Rice et. al., 1990). More exposure to the new words is also necessary for children with SLI to perform comparably to their matched peers (Rice, Oetting, Marquis, Bode, & Pae, 1994).

Multi-intervention studies examined the relative influence of different interventions on children's phonemic awareness, speech sound production, and expressive language skills (Tyler, Gillon, Macrae, & Johnson, 2011; Law, Garrett, & Nye, 2004; Gierut, 1998; Gillon, 2000; Hesketh, Adams, Nightingale, & Hall, 2000). For example, in a study by Tyler et al. (2011), two interventions were implemented within a group of 3- to 5-year-old children with co-occurring speech sound disorders and language impairment from the U.S. and New Zealand. One experimental group received the *PA/SS intervention* (Gillon, 2005), which

involved *phoneme awareness and letter/sound knowledge, integrated with speech sound production*; and the other group received the *MS/SS intervention* (Tyler, Lewis, Haskill, & Tolbert, 2003), which involved a *morphosyntax intervention and a speech sound intervention*, provided in alternate weeks. The PA/SS did not target morphosyntax directly, and the MS/SS did not target phoneme awareness and letter-sound knowledge directly (Tyler et al., 2011). Children from matched pairs were randomly assigned to these treatments, delivered in 6-week blocks separated by a 6-week break. Phoneme awareness, speech sound production and oral language outcome scores were collected pre-treatment as well as after each treatment block (Tyler et al., 2011). Measures that assess phonological awareness included rhyme detection tasks, phoneme awareness tasks that target initial phoneme identity, phoneme blending and segmentation, and letter name and letter sound knowledge (Gillon, 2005). Measures of spoken language outcomes included finite morpheme composite and MLU (mean length of utterance) from spontaneous language samples (Tyler et al., 2011). Percent consonants correct and cluster accuracy tasks were primary speech change measures (Tyler et al., 2011). Both intervention groups made significant gains in all measures, with the exception of a morpheme measure only approaching significance (Tyler et al., 2011). Results showed the need for early intervention that integrates oral language and phoneme awareness/early literacy skills for children with multiple deficits (Tyler et al., 2011).

In sum, several phonetic and phonological interventions (Powell et al., 1998; Rvachew et al., 1999; Ylinen & Kujala, 2015), word learning interventions (Rice et al., 1990; Rice et al., 1992; Chen & Liu, 2014; Kelley et al., 2015), and mixed intervention methods that combine phoneme awareness, letter/sound knowledge, and speech sound production tasks (Tyler et al., 2011) have been developed to help children with SLI improve their expressive language skills. In addition, such interventions have been linked with strengthened brain activation in children with SLI (Heim et al., 2013; Pihko et al., 2007; Stevens et al., 2008).

4.2. Morphological and Syntactic Processes

Children with co-occurring phonological and morphosyntactic disorders comprise the largest segment of preschoolers with identified speech and language disorders (Broomfield, & Dodd, 2004; Conti-Ramsden & Botting, 1999). Using correct grammar is especially challenging for children with expressive language deficits (Leonard, Camarata, Pawlowska, Brown, & Camarata, 2006; Leonard, 1998). Different explanations have been given regarding the reasons why children have expressive grammar difficulties (Leonard, 1998; Gopnik, 1990). According to one view, acoustic features of grammatical morphology in English (e.g., shorter relative duration and/or low phonetic substance), when combined with limited processing capacity in the form of slower processing, make the grammatical features more difficult for children with SLI to acquire (Leonard, 1998). Leonard (1998) argued that part of the problem rests in the children's ability to derive the grammatical function of the morphology before the acoustic patterns are lost in memory. For example, preschool-age English speaking children with SLI were found to be limited in their use of grammatical morphemes that pertain to tense and agreement (Leonard, Camarata, Pawlowska, Brown, & Camarata, 2008; Leonard et al., 2006). In addition, in line with the competence-based theories of SLI, Gopnik (1990) proposed that the grammatical deficits seen in children with SLI are due to an inability to learn the underlying rules for marking grammatical tense.

Leonard (1998) argued that omissions of bound morphemes are a hallmark of SLI, while other studies suggested that this deficit pattern can change substantially with changes in extrinsic language contexts (Bishop, 1994; Evans, 1996; Evans & Craig, 1992). For example, Evans (1996) found that for some children with SLI, omissions of bound morphemes were not dispersed evenly throughout their language, but, occurred only at points in spontaneous speech discourse where processing demands were the greatest. In such conditions in which the processing demands are high, a child with SLI who has slower lexical access may spontaneously organize his or her speech by dropping extraneous “grammatical” information not critical to the intended meaning to meet the timing restrictions inherent in spontaneous speech production (Evans, 2001). This type of spontaneous adaptive response is also witnessed when children with SLI produce longer and more complex utterances when given increased response times (Evans, Kass, & Viele, 1997).

The effect of morphosyntactic intervention and its cross-domain influences on phonology were studied as part of a larger project by Tyler, Haskill, and Tolbert, 2002. Children who received the intervention made significant gains in morphosyntactic as well as phonological changes (Tyler et al., 2002). The hypothesis was that the morphosyntactic intervention, which focused specifically on finite morphemes (Haskill, Tyler, & Tolbert, 2001), resulted in phonological gains because of its indirect focus on segments in final cluster forms (Tyler et al., 2002). Research by Kirk and Gillon (2007) demonstrated that children with a history of speech impairment who had received preschool phonological awareness intervention showed stronger morphological awareness knowledge than did children who received early intervention focused on speech production alone.

In an earlier study by Lee and Ashmore (1983), receptive and expressive *wh* interrogative performance of language-delayed children was investigated. The formulation of *wh* questions requires three steps: 1) choosing the appropriate *wh* word, 2) placing the *wh* word at the beginning of the sentence, and 3) inserting the auxiliary and performing a reversal transformation (Cattell, 1969). Typically developing children master the majority of *wh* questions by age 4 (Brown, Cazden, & Bellugi-Klima, 1968; Lee & Ashmore, 1983). Within young children (ages 4 to 6 years) diagnosed with language impairment (i.e., twelve subjects exhibited primarily expressive delays, and eight subjects had both expressive and receptive language deficits), the results indicated that all the children performed better receptively than expressively (Lee & Ashmore, 1983). In general, the types of syntactical errors made by the language delayed children resembled those made by the typically developing children during the third stage of language acquisition (i.e., the insertion of the auxiliary and performance of a reversal transformation in the sentence) (Lee & Ashmore, 1983). This result suggested that the children in this study used the same rules for formulation of *wh* interrogatives (i.e., where, what, who, when, why, and how) as those of typically developing children in the early stages of language development. However, the language-delayed children performed a limited number of transformations in a sentence, as evidenced by the number of auxiliary and inversion errors in their sentence constructions (Lee & Ashmore, 1983). The conclusion was that language-delayed children developed the same order of acquisition and rules for questioning as typically developing children, but, at a slower rate (Lee & Ashmore, 1983). In a study by Rvachew et al. (2004), pre- and post-treatment assessment results showed that there is a relationship between phonemic perception and articulatory accuracy and between phonic perception and phonological awareness. However, their findings were consistent with Gillon’s (2002) conclusion that remediation of expressive phonological delay does not

automatically lead to attainment of age-appropriate phonological awareness skills (Rvachew et al., 2004).

Interventions designed to treat morphological difficulties are better developed if they take into account research and clinical findings that indicate that morphosyntactic and phonological skills are related (Kirk & Gillon, 2007; Haskill et al., 2001; Tyler et al., 2002). Morphosyntactic interventions on language are usually designed focusing on the morphophonemic interactions, particularly finite morphemes (Haskill et al., 2001). Interventions should also target acoustic features of grammatical morphology and the processing speed capacity of children with SLI, since slower processing makes grammatical understanding more challenging for children with SLI to master (Lee & Ashmore, 1983; Leonard, 1998).

5. IMPLICATIONS FOR SOCIAL COMMUNICATION, WRITTEN LANGUAGE, AND COMMON CORE CURRICULUM

Expressive language deficits are most often associated with social-communication and written communication skills in young children (Larkin, Williams, & Blaggan, 2013; Washington & Warr-Leeper, 2006; Wolter & Pike, 2015), which are both necessary for daily living tasks at home and school. In most states, the school curriculum follows the Common Core State Standards in English Language Arts and Literacy (CCSS/ELA), which is a codified set of learning and end-of-the-year achievement expectations for children and adolescents from Kindergarten through the 12th Grade (Smith Gabig & Zaretsky, 2013). In addition to written communication, expressive language skills are associated with other aspects of the Common Core such as language, reading, and literacy skills (Smith Gabig & Zaretsky, 2013).

5.1. Implications for Social Communication

A large body of intervention techniques have been developed to treat expressive language difficulties during speech and social communication, including but not limited to computerized and non-computerized interventions to treat speech production and expressive grammar, the use of speech/language therapy to aid social skills such as friendship making, interventions that concentrate on parent-child supportive interactions to promote children's conversational responsiveness (Washington, Warr-Leeper, & Thomas-Stonell, 2011; Law et al., 2004; Majorano & Lavelli, 2015), and interventions that are conducted in the school (Fantuzzo et al., 1995; O'Connor & Stagnitti, 2011; Nicolopoulou, Cortina, Ilgaz, Cates, & de Sa, 2015; Nicolopoulou, 2002).

5.1.1. Computer Assisted and Non-Computer Assisted Treatments of Expressive Language Deficits

Use of computers is a viable option for the remediation of agrammatical productions during speech (Cohen et al., 2005; Washington & Warr-Leeper, 2006). Benefits of computers in treatment for children with SLI have been well established (Washington et al., 2011;

Gillam et. al., 2008; Cohen et al., 2005). For example, a newly designed computer-assisted treatment, *My Sentence Builder*, has recently been used for the remediation of expressive-grammar deficits, thought to be associated with deficits in verbal working memory in children with SLI (Washington et al., 2011). Other techniques such as *Reduced Syntax Therapy (REST)* (Springer, Huber, Schlenck, & Schlenck, 2000) & Syntactic Slot-Filler Approach (Fokes, 1976) target accurate production of sentences to address agrammatism in young children. Washington et al., (2011) indicate that when addressing agrammatism in young children, compensatory options can be used by a) training the accurate production of simple sentences and b) monitoring for generalization and expansion into more complex sentences.

In addition to computer-assisted treatment (C-AT) that addresses expressive-grammar deficits in children with SLI (Gillam et al., 2008; Cohen et al., 2005), non-computer assisted treatment (nC-AT) of expressive-grammar deficits also facilitates gains in the use of targeted structures (Beeke, Wilkinson, & Maxim, 2003; Leonard et al., 2006, 2008). For example, the use of techniques such as *sentence break-down* (i.e., breaking the sentence down into component parts such as subject-verb-object, SVO) and *subsequent build-up* (i.e., producing the sentence in its entirety) may be helpful along with drill-play and emphatic stress to highlight missed or errorful grammatical morphemes.

5.1.2. Speech/Language Therapy as an Intervention Method to Treat Phonological Difficulties Involved in Expressive Language Deficits

Speech/language therapy is a commonly used method to treat expressive language delays (ASHA, 2007, 2010). There are more than 130,000 speech language pathologists (SLPs) in the United States, of which an estimated 28,000 provide therapy services within elementary schools (ASHA, 2010; Bureau of Labor Statistics, 2012). In year 2014, the percentages of students on school-based SLPs' monthly caseload by degree of communication impairment were reported as follows: 26% of the total caseload as having severe/profound impairment, 44% with moderate impairment, and 30% with mild impairment (ASHA, 2014). SLPs' workload involves providing direct language intervention services to students with language impairments (ASHA, 2014). High-quality language intervention is emphasized as an important component for enhancing language, literacy, academic and socio-emotional outcomes of students, and quality of language therapy is very closely tied to the time pressures that SLPs experience (Biancone, Farquharson, Justice, Schmitt, & Logan, 2014).

Traditional speech/language interventions are based on direct interaction between student/patient and therapist via a set of activities developed by the therapist (Saz et. al., 2009). For example, computer-aided speech/language therapy software has been a major focus since the 1990's (Saz et al., 2009). In the area of phonetics/phonology, some therapy approaches have traditionally focused on articulation production and others have been more phonological/language-based. Articulation approaches target each sound deviation and are often selected by the SLP when the child's errors are assumed to be motor-based. Phonological approaches target a group of sounds with similar error patterns, although the actual treatment of exemplars of the error pattern may target individual sounds. Phonological approaches are often selected in an effort to help the child internalize phonological rules and generalize these rules to other sounds within the pattern (ASHA, 2015). Both approaches might be used in therapy with the same student at different times or for different reasons (ASHA, 2015).

In addition to selecting appropriate targets for therapy, SLPs select treatment strategies based on the number of therapy goals to be addressed in each session and the manner in which these goals are implemented. A particular strategy may not be appropriate for all children and strategies may change throughout the course of intervention as the child's needs change (ASHA, 2015).

Speech and language therapy designed for the acquisition of the phonetic system of the language consists of sessions between the SLP and the student who produces different words and receives an evaluation of the correctness of the pronunciation by the therapist (Saz et. al., 2009). There are many traditional interventions to treat phonological difficulties, including but not limited to minimal pair therapy, core vocabulary approach, a cycles approach, and distinctive features approach (ASHA, 2015). For example, Minimal Pair Therapy for phonological processes (e.g., final consonant deletion “kni/knife” or fronting “tape/cape”) may be used to demonstrate children with phonological disorders that there is a contrast between their production of the word (i.e., “tup”) and the target word (i.e., “cup”). Speech/language therapy using minimal pairs also demonstrates that a word with a substituted phoneme forms a different word with a different meaning (Weiner, 1981).

A core vocabulary approach focuses on whole-word production and is used for children with inconsistent speech sound production who may be resistant to more traditional therapy approaches (ASHA, 2015). Vocabulary targets for practice are those that are used frequently as part of the child's functional communication system. A list of frequently used vocabulary words is developed (e.g., based on observation and teacher report), and a number of words from this list are selected each week for treatment. The student is taught his "best" word production, and the words are practiced until consistently produced (Dodd, Holm, Crosbie, & McIntosh, 2006).

Hodson's Cycles approach to treating phonological disorders contrasts the child's actual production with a minimal-pair word to facilitate understanding of the semantic difference between the two productions (Hodson, 2010). During each cycle, one or more phonological patterns are targeted. After each cycle has been completed, another cycle begins, targeting one or more different phonological patterns. Recycling of phonological patterns continues until the targeted patterns are present in the child's spontaneous speech (Hodson, 2010).

Distinctive feature therapy focuses on elements of phonemes that are lacking in a child's repertoire (e.g., frication, nasality, voicing, and place of articulation) and is typically used for children who primarily substitute one sound for another (ASHA, 2015). This approach uses tasks that compare the phonetic elements/features of the target sound with those of its substitution or some other sound contrasts. Patterns of features can be identified and targeted, and producing one contrast often generalizes to other sounds that share the targeted feature (Blache & Parsons, 1980; Blache, Parsons, & Humphreys, 1981). In addition, the application “Vocaliza” trains the phonological abilities of children while also introducing to them the semantics and syntax of the language with varied activities (Saz et. al., 2009).

Macrae and Tyler (2014) indicate that children with phonological difficulties who use atypical error patterns should be given priority for intervention, since it is not likely that their performance will normalize without it. Macrae and Tyler (2014) report that the same could be said for children with co-occurring SSD and language impairment who show more frequent use of omission error patterns, given their more compromised linguistic system and their risk of developing literacy disorders. They suggest alternating speech/language goals on a weekly basis with a therapy approach to target both deficits (Macrae & Tyler, 2014). The alternation

of goals will lead to superior gains and similar phonological gains in children with co-occurring speech and language deficits, in comparison with approaches that target each domain in blocks and both domains in the same session (Tyler et al., 2003).

Speech language therapy may also target pragmatic and social-communication skills (Lee & Ashmore, 1983). For example, therapeutic activities that teach appropriate *wh*-questioning are successful when they follow the order of interrogative development presented in three stages (i.e., choice of the appropriate *wh* word, placement of it in the beginning of the sentence, inclusion of the auxiliary and inversion of the subject and the verb) (Lee & Ashmore, 1983). Expressive language interventions, therefore, should take into account these transformations required for production of interrogative sentences (Lee & Ashmore, 1983). Verb selection is also important, since use of intransitive verbs during interrogative sentence construction that do not need a direct object to complete their meaning (e.g., come, go, run, sleep) is easier for young children and may lead to better comprehension (Lee & Ashmore, 1983). The importance of the variety of clinical services that SLPs provide is well documented, since students with language impairments are prone not only to having problems with language skills, but also are susceptible to difficulties in literacy (Catts et al., 2002), academic performance (Conti-Ramsden, Simkin, Knox, & Durkin, 2009), and social-emotional functioning (Sundheim & Voeller, 2004).

5.1.3. Intervention Methods that Include Parents, Teachers, and Schools in the Treatment of Expressive Language Deficits

Families are an important part of any intervention designed to treat children's expressive language difficulties (Majorano & Lavelli, 2015). In a study with Italian children with SLI (age range: 3;4-5;6) and two groups of age-matched typically developing children, mother-child shared book reading sessions were conducted and recorded (Majorano & Lavelli, 2015). Maternal utterances that included or were related to a sophisticated word (i.e., low-frequency word) were coded on the basis of a) informativeness, and b) scaffolding provided. Sophisticated vocabulary included both sophisticated words read from the book, and sophisticated words that were introduced into the book-reading conversation spontaneously by the mother (Majorano & Lavelli, 2015). In addition, child utterances were coded for complexity, and children's lexical development was assessed three months later. Results indicated that mothers of children with SLI produced a higher percentage of directly informative utterances with gestural scaffolding than did mothers of chronologically-age matched children. Only in the SLI group, these kind of utterances were significantly followed by child's extended utterances. Child's lexical development (production) was related to direct maternal informativeness in both the SLI- and chronologically-matched groups, and to gestural scaffolding only in the SLI group. On the whole, these findings suggested that mothers of children with SLI attune their language to their children's linguistic limitations and that the gestural quality of the interactive scaffolding is related to these children's conversational participation and their level of lexical progress (Majorano & Lavelli, 2015).

Interventions designed in the schools may also increase children's language skills (O'Connor & Stagnitti, 2011; Lantz, Nelson, & Loftin, 2004; Stagnitti, 2009; Nicolopoulou et al., 2015). In a study by O'Connor and Stagnitti (2011), children ages 5-to-8 with multiple disabilities that included developmental delay and Autism participated in a play intervention entitled "Learn to Play Program." Their pretend play, language, and social skills were compared to a group of control children participating in traditional classroom activities

(O'Connor & Stagnitti, 2011). Play skills were assessed by two instruments: 1) Child-initiated Pretend Play Assessment (ChIPPA), a norm-referenced play assessment for children ages 3-to-7 that measures the quality of a child's ability to engage in pretend play (Stagnitti, 2007), and 2) Penn Interactive Peer Play Scale (PIPPS), a 32-item rating scale of preschool children's interactive peer play competencies (Fantuzzo et al., 1995). Findings revealed that children who participated in the play intervention showed a significant decrease in play deficits, were less socially disruptive, and more socially connected to their peers, while both the experimental and the control group improved in their overall language skills measured by the Preschool Language Scale, fourth edition (Zimmerman, Steiner, & Pond, 2002). The PLS-4 includes two subscales, and an overall language skills score that is a combination of these two scales: the Auditory Comprehension Scale that is used to evaluate how much language a child understands, and the Expressive Communication Scale that is used to determine how well a child communicates with others (Zimmerman et al., 2002). This study supported the use of play intervention in improving children's play, behavior, language, and social skills (O'Connor & Stagnitti, 2011).

In a more recent study, story-telling and story-acting (i.e., STSA) were combined to create an intervention that was integrated as a regular component of a preschool curriculum (Nicolopoulou et al., 2015). The STSA was introduced in the experimental classrooms for the entire school year and the participants were low-income 3-to-4 year old preschool children. Participation in the STSA was associated with improvements in narrative comprehension, print and word awareness, pretend play abilities and reduced play disruption (Nicolopoulou et al., 2015). Within another sample of low-income preschoolers (ages 3-4), participation in STSA led to significant gains in a narrative production task, and improvements in scores on the Expressive Vocabulary Test (EVT) that measured a combination of vocabulary knowledge and vocabulary-related skills (Nicolopoulou, 2002).

Use of visual cues has been established as an effective method that increases children's language ability (Cunillera, Camara, Laine, & Rodriguez-Fornells, 2010). For example, during the implementation of the Learn to Play program, children were required to examine photos after a play session and communicate what they represented (O'Connor & Stagnitti, 2011). It was concluded that use of visual cues may have been a contributing factor to the improvement of language scores within children participating in the play intervention (O'Connor & Stagnitti, 2011).

Other effective oral language and literacy interventions have been developed to promote school readiness among at-risk young children (Kelley et al., 2015). Among these were shared book reading and language enhancement interventions, Tier 1 high-quality general education curriculum, Tier 2 high quality small group interventions, and intensive individualized Tier 3 interventions (Fuchs & Fuchs, 2006; Fischel & Landry, 2008; Lonigan, Shanahan, & Cunningham, 2009; Marulis & Neuman, 2010; Mol, Bus, & De Jong, 2009; Mol, Bus, De Jong, & Smeets, 2008). Marulis and Neuman (2010) concluded that only vocabulary interventions using explicit teaching strategies produce large intervention effects. In these interventions, words are presented with explicit instruction that includes child-friendly definitions and multiple examples and contexts to provide information about word meanings (Coyne, McCoach, Loftus, Zipoli, & Kapp, 2009; Justice, Meier, & Walpole, 2005). For example, participants of a small group storybook intervention entitled "*Story Friends*," in which vocabulary and question-answering lessons were embedded in a series of

storybooks, had significantly higher scores on measures of vocabulary than the comparison group which was exposed to the regular school curriculum (Kelley et al., 2015).

In sum, both the parents (e.g., via dyadic reading sessions with children) and the schools (e.g., via play-based, storybook reading-based, and/or narrative ability-based programs to improve vocabulary and expressive communication) can be included in intervention designs to treat children's expressive language difficulties (Majorano & Lavelli, 2015; O'Connor & Stagnitti, 2011; Kelley et al., 2015; Nicolopoulou et al., 2015; Nicolopoulou et al., 2002).

5.2. Implications for Written Language and Written Communication

Written language skills (e.g., spelling) are influenced by children's expressive language abilities and vocabulary knowledge (Larkin et al., 2013). Even when children's speech difficulties are resolved through early intervention, some will struggle to use linguistic information, such as morphological information, to accomplish spelling of complex words (Kirk & Gillon, 2007). For example, early intervention, implemented as young as at 3 and 4 years of age that facilitates phoneme awareness, letter knowledge, and early reading development was associated with positive growth in spelling morphologically complex words (Kirk & Gillon, 2007).

In a longitudinal study, lexical-semantic abilities, verbal-sequential processing and speech production abilities (at Time 1) of 7-year old Dutch children identified with SLI predicted word reading and spelling development seven months later (at Time 2) (Van Weerdenburg, Verhoeven, Bosman, & Van Balkom, 2011). Verbal-sequential processing was the strongest predictor for both word decoding and spelling (Van Weerdenburg et al., 2011). The important role of verbal-sequential processing in learning to decode and writing words was emphasized for children with SLI (Van Weerdenburg et al., 2011).

The ability to segment and blend units of language such as phonology (i.e., phonemic awareness) and comprehension of vocabulary have been indicated to be predictive of reading and writing success (National Reading Panel, 2000; Wolter & Pike, 2015). Research evidence shows that phonemic awareness, a very important metalinguistic skill, has explained large unique variances in reading and spelling abilities of early elementary grade students (Ehri et al., 2001; Manis, Doi, & Bhadha, 2000). In addition, vocabulary knowledge during reading is directly related to extraction of meaning to comprehend written text (Elleman, Lindo, Morphy, & Compton, 2009).

Phonemic awareness and vocabulary skills, however, are not the only factors that have an influence on reading and spelling skills (Wolter & Pike, 2015). Morphological awareness, another crucial metalinguistic skill, also explains additional and unique variance in elementary grade students' reading and spelling abilities (Wolter & Pike, 2015). Ability to segment and blend morphemic units predicted reading and spelling in elementary school children (Apel & Lawrence, 2011; Wolter & Green, 2013; Wolter, Wood, & D'zatko, 2009). The awareness of morpheme units can aid in word decoding (e.g., pronouncing /s/ and /h/ separately, versus the incorrect pronunciation of *-sh*, in the word *mishap*) as well as in spelling (e.g., correctly spelling *cars* with the final *-s* pronounced /z/ but spelled consistently with the plural *-s*) (Carlisle, 1995). Other findings indicated that inflectional morphemes tend to be omitted in the spelling attempts of children with SLI; for example, the target word

“*raced*” may be spelled as “*race*” (Silliman, Bahr, & Peters, 2006; Windsor, Scott, & Street, 2000).

Recent research has increasingly shown that implications of specific language impairment for classroom learning should include an understanding of spelling development in children (Larkin et al., 2013). Individual children with SLI experience significant difficulties with morphological awareness, phonological memory, and expressive language (Marchman, Wulfeck, & Weismer, 1999). In addition, many children with SLI seem to show global phonological awareness deficits which would inhibit their ability to grasp the early stages of spelling development (Claessen & Leita, 2012). Given the potential role of spoken language in spelling proficiency, and the range of oral language deficits seen in SLI, many studies have found children with a history of SLI to be at risk for later spelling difficulties (Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998).

5.3. Implications for Common-Core Curriculum

The Common Core State Standards in English Language Arts and Literacy (CCSS/ELA) encompasses four broad curriculum areas: Reading, writing, speaking and listening, and language (Smith Gabig & Zaretsky, 2013). The Language strand of CCSS/ELA standards further codifies expectations into three subareas: Conventions of standard English, knowledge of language, and vocabulary acquisition and use (Smith Gabig & Zaretsky, 2013). A major goal of the Common-Core curriculum is explicit teaching of morphological processing to children and adolescents in order to facilitate word reading, reading comprehension, vocabulary development, and spelling (Smith Gabig & Zaretsky, 2013). In addition, as part of the common core standards, teachers are in need to be knowledgeable about phonetic and phonological principles, since (1) the sound system is primary and the basis for the spelling system; (2) English pronunciation is hard to teach students who are not native speakers of English without knowledge of phonetic/phonological processes; (3) teaching of specific subjects (i.e., poetry) requires that teachers teach about rhyme, alliteration, assonance, and other poetic devices that manipulate sound; (4) knowledge of different accents and language variation is a crucial skills for teachers; (5) there is a tendency to “hear” the sounds of the English language through its spelling system, and phonetics/phonology provides a corrective to that that teachers should convey to students; and (6) phonetics and phonology provide systematic and well-founded understandings of the sound patterns of the language (Delahunty & Garvey, 2010; Common Core State Standards Initiative, 2015).

SUMMARY AND RECOMMENDATIONS

Children with SLI experience moderate to severe difficulties in the comprehension and production of language in the absence of cognitive, emotional, neurological, or social impairments (Tomblin et al., 1997). These difficulties range from deficits in vocabulary and word-finding, to impairments in morphology, syntax, pragmatics, nonverbal and verbal working memory, slower verbal and nonverbal processing, and deficits in speech perception (Bishop, 1997; Leonard, 1998; Evans, 2001). While there are competence and performance

accounts of SLI, more complex accounts suggest that language disorders, from an emergent perspective, are a manifestation of children's unique interactions with the environment (i.e., language input) (Evans, 2001). Phonetic abilities and phonological knowledge are inter-related, and are among children's skills that interact with their morphological and syntactic abilities, which collectively inform expressive language skills (Contemori & Garraffa, 2010; Rvachew et al., 2004).

The ultimate goal in the study of individuals with language disorders is to discover an effective course of treatment (Evans, 2001). Among intervention methods used to treat SLI, specifically, expressive language impairment, are computer-assisted as well as non-computer assisted therapeutic programs, word learning interventions, and speech/language therapy (ASHA, 2015; Cohen et al., 2005; Washington & Warr-Leeper, 2006; Washington et al., 2011; Chen & Liu, 2014; Kelley et al., 2015). In addition, environmental interventions such as provision of maternal support (e.g., direct information regarding the meaning of sophisticated, low-frequency words, accompanied by gestural scaffolding) and school-based interventions (e.g., play-based learning, storytelling) have been shown to be effective for promoting children's conversational responsiveness and lexical development, particularly with children with SLI with primarily expressive language deficits (Fantuzzo et al., 1995; Majorano & Lavelli, 2015).

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Chapter 32

COARTICULATION

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ABSTRACT

One of the central issues in contemporary phonetics is that of coarticulation. Speech segments do not and cannot occur isolated in real speech. As elements of a multisegmental utterance in continuous speech, all segments have neighbors which exert a certain degree of influence upon them. The vast array of articulatory adaptations that occurs as a result of the influence of one phonetic structure on another is what constitutes coarticulation in its broadest sense. Because of its ubiquitous nature in continuous speech, coarticulation has been and continues to be a central research area in experimental and theoretical articulatory phonetics. Naturally then, any integral theory or model of speech production, and to a lesser degree speech perception, must account for coarticulation. In this chapter we provide a general introduction to coarticulation, to the techniques used to measure it, and to the major theoretical and experimental contributions in explaining the nature and principles that govern it. Depending on the theoretical approach, the definition and scope of coarticulation may vary significantly, thus we aim to review and assess some of the more influential models of coarticulation, which constitute a fundamental part of contemporary phonetics. Theories and models of coarticulation also have significant consequences on phonological theory, especially the phonology-phonetics interface. Modelling coarticulation is central to understanding how the categorical, timeless and context-independent units suggested by phonology and the gradual, dynamic and context-dependent characteristics of continuous speech are related to each other. Therefore, in this chapter we also explore the place of coarticulation in the phonology/phonetics dichotomy, relating coarticulation to what may in essence be viewed as its phonological counterpart – assimilation.

Keywords: phonetics, coarticulation, speech production, continuous speech, articulation

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1. INTRODUCTION

Speech is a dynamic and continuously varying process. In normal speech, sounds do not occur in isolation, but rather as integral elements of a multisegmental utterance, ineluctably exerting influence on other adjacent elements within the utterance. Thus what is mentally a separable unit, call it a ‘segment’ or a ‘phoneme’, in real speech is realized as a continuous stream of articulatory movements. Each of these segments projects an articulatory requirement, a ‘target’ to be reached by the articulators. But in actuality these ideal targets are not necessarily reached, especially not in a uniform manner, for various reasons, perhaps most notably because one target is drawn off by having to quickly (within milliseconds) aim at the next one. The succession of these articulatory movements is seamlessly streamlined: during the production one articulatory movement (related to one segment), another movement (related to an adjacent segment) begins. This ubiquitous property of speech has an important corollary, namely that at any given time during the articulation of speech sounds, the vocal tract may be influenced by more than one articulatory movement (Farnetani – Recasens 2013: 316). So what mentally (or even orthographically) may be considered discrete elements, in speech occurs as the overlapping of articulatory movements. This phenomenon is one of the core properties of speech and is usually referred to as ‘coarticulation’. Its precise definition, however, is a matter of debate and ongoing research in phonetics, and, as will be shown (§3), vastly depends on the theoretical framework adopted.

Coarticulation is a universal property of speech, but only in the sense that at least some coarticulatory effects are present in all (studied) languages of the world (Laver 1994: 376). However, the types of coarticulatory effects, their scope, direction, timing and causes all vary significantly from language to language, and from speaker to speaker (Perkel 1986: 261). Nevertheless, it is possible to reduce this great variability to a manageable number of categories by classifying coarticulatory effects along certain general criteria (§2).

As a feature of the articulatory apparatus, coarticulation may be measured (§4). Various measuring and imaging techniques are at our disposal, such as electropalatography, ultrasound, magnetic resonance imaging, computed tomography, electromyography etc., all with certain advantages and drawbacks. These techniques may be applied in coarticulatory research in order to improve understanding of articulatory organization during speech and to gain insight into various movement strategies present in coarticulation.

Theories and models of coarticulation have significant consequences on phonological theory, especially the phonology-phonetics interface. Modelling coarticulation is central to understanding how the categorical, timeless and context-independent units suggested by phonology and the gradient, dynamic and context-dependent characteristics of continuous speech are related to each other (Harrington et al. 2013: 244). This relation is particularly evident in the relationship between coarticulation and what may in essence be viewed as its phonological counterpart – assimilation (§5).

We shall explore these various topics pertaining to coarticulation in turn.

2. GENERAL ACCOUNT OF COARTICULATION

There are many different and more or less compatible views of what ‘coarticulation’ is. While there is by no means total consensus, most definitions of coarticulation include either ideas about articulatory movements pertaining to different segments being somehow changed, adapted or blended, or ideas about different articulatory movements being relatively independent but overlapping in time.

The first set of ideas, where articulatory conflict is usually handled by averaging out the goals of the competing articulations (e.g., Kelso et al. 1986), may be considered an ‘adaptive’ approach to coarticulation, due to the fact that the form of a particular articulatory movement may be changed under the influence of adjacent movements. An explanation of coarticulation in such terms, therefore, may take this form:

Coarticulation is (...) to be regarded as a process whereby the properties of a segment are altered due to the influences exerted on it by neighboring segments (Hammarberg 1976: 576)

In co-articulation, there is a discernible degree of accommodation between articulatory features of a given string of adjacent segments (Laver 1994: 151)

Adjacent segments can show an articulatory ‘feature-sharing’ process at work as part of their accommodation to their occurrence in the particular context (op. cit.: 376)

The coordinatory phenomenon of accommodatory spreading of articulatory features has come to be known as co-articulation (op. cit.: 379)

In co-articulation, we can say that a setting finds its expression as an adjustment of the featural properties of one segment towards greater phonetics similarity to those of an adjacent segment (op. cit.: 397).

The second set of principles, where articulatory conflict is viewed as temporal overlapping of relatively independent articulatory movements, may be considered an ‘invariant’ approach to coarticulation, because in such a view articulatory movements remain stable, albeit somewhat masked by the onsets and offsets of adjacent articulations. A definition of coarticulation related to such an approach thus may take these forms:

Coarticulation refers to the fact that at any given point during an utterance, the influences of gestures associated with several adjacent or near-adjacent segments can generally be observed in the acoustic or articulatory patterns of speech (Fowler – Saltzman 1993: 173)

‘Coarticulation’ refers to the overlap of articulatory gestures associated with separate speech segments, and by extension to its acoustic effects (Keating 2003: 330)

(...) the movements of different articulators for the production of successive phonetic segments overlap in time and interact with one another: as a consequence, the vocal tract configuration at any point in time is influenced by more than one segment. This is what the term ‘coarticulation’ describes (Farnetani – Recasens 2013: 316)

In real speech articulations transition continuously from one to the next, with movements constantly overlapping, and sometimes conflicting. These various transitional processes fall under the rubric of coarticulation (Gick et al. 2013: 217).

These two approaches are complementary rather than mutually exclusive: accommodation between articulatory characteristics of segments may be viewed as a result of the overlapping of articulatory gestures needed to produce them, where ‘articulatory gesture’ is defined as “an actively controlled movement toward a presumed target configuration” (Recasens et al. 1997: 544). Some phoneticians use the term ‘coarticulation’ in a narrower and rather literal sense of simultaneous movement of two different articulators – as ‘co-production’, so to say (see §3.4 for elaboration). Under such a definition, for example, the lip rounding produced during the articulation of a consonant, anticipating the rounding of a following vowel (as in *saw* or *sue*), is coarticulation, but the adjustment of the tongue position for a velar consonant, anticipating the tongue posture for the following vowel, is not. This second kind of phenomenon may then be termed ‘adaptation’ or ‘accommodation’ (Clark et al. 2006: 86). Here we will adopt a wide perspective and consider both types of processes as coarticulation. Whatever the point of view may be, coarticulatory effects may be classified in terms of their direction, scope and articulators involved.

When it comes to direction, two types of coarticulation are distinguished, anticipatory and perseverative coarticulation. ‘Anticipatory coarticulation’ occurs when the articulation of a particular sound is affected by that of a later-occurring sound. Accordingly, in anticipatory coarticulation the articulatory gesture related to a particular sound begins during the production of one or more articulatory gestures that precede it. Its direction is sometimes (e.g., Ashby 2011: 152) depicted as ‘L ← R’, where ‘L’ and ‘R’ represent adjacent speech sounds, and ‘←’ means ‘is influencing’. Anticipatory coarticulation is also known under various different terms, such as ‘right-to-left’, ‘regressive’ or ‘forward’ coarticulation (Kent – Minifie 1977: 117; Lubker 1981: 129; Reetz – Jongman 2009: 39). An example can be found in the behavior of velar plosives [k] and [g] in English. Velar plosives become fronted when preceding front vowels, as in the word *ski*. Therefore, in anticipation of the upcoming front vowel [i], which requires a fronted tongue body, the tongue in [k] contacts the velum at a substantially more forward location. Conversely, when a velar plosive is adjacent to a back vowel such as [u], it becomes retracted, as in *cool*. The same holds for the velar plosive [g], in words such as *geek* or *forgive*, where the tongue body is fronted, and *goo* or *ghoul*, where the tongue body is retracted. In a narrow phonetic transcription, such fronting and retracting of the tongue body may be noted with corresponding diacritic marks: [s̟ki:] and [k̠^{hw}u:l̟]. The latter example shows another kind of anticipatory effect, namely labial coarticulation, indicated by the diacritic ‘^w’ in transcription. During production of the plosive [k], which is usually unrounded, the lips nevertheless make a rounding gesture, in anticipation of the upcoming articulatory gesture characteristic for the vowel [u]. Vowels can also show effects of anticipatory coarticulation. Thus a vowel preceding a nasal consonant becomes nasalized because the velar port starts opening during the vowel in anticipation the upcoming nasal. This effect can be observed in a myriad of examples such as *seen* [s̠i:n], *soon* [s^wũ:n] etc. It is important to point out that a single sound may be affected by several distinct coarticulatory effects at the same time, depending on the totality of articulatory properties of the affecting sound: [k̠^w] in *cool* shows two distinct coarticulatory effects, retraction and labialization, where retraction stems from the vowel’s backness property and labialization from its roundedness.

In ‘perseverative coarticulation’ the prolonged influence of a certain segment is exercised on one or more segments which follow it in a stream of speech. Accordingly, in perseverative coarticulation the articulatory gesture related to a particular sound is still being produced

while the gestures of following sounds are being initiated. Therefore, in preservative coarticulation a simple ‘L → R’ relation holds. This type of coarticulation is also known as ‘left-to-right’, ‘carry-over’, ‘progressive’, ‘retention’ or ‘backward’ coarticulation (Kent – Minifie 1977: 117; Lubker 1981: 128; Reetz – Jongman 2009: 39). The devoicing of approximants following voiceless aspirated plosives can be viewed as an instance of perseverative coarticulation, with the voicelessness of the initial plosive carrying over to the following approximant, as in *please* [p^hli:z]. The aforementioned cases of anticipatory tongue body fronting and retracting work in an opposite, perseverative, direction as well, as in *seek* [si:k̚] and *arc* [aḱ], respectively. It is important to mention that the designation of coarticulatory effects as anticipatory or perseverative depends strongly on the theoretical premise that at some level before the production of speech there is an underlying linear abstract segmental representation, what is usually called a ‘phonological representation’, where discrete precedence relations hold (Hardcastle 2006: 503; see Harris 2007: §6.2 for discussion, and Cairns – Raimy 2011 for a review of precedence relations in phonological representations). Otherwise, the directionality of such effects would be untenable, and perhaps even the entire concept of coarticulation depends on this theoretical position: “An intuitive concept of ‘segment’ underlies our recognition that there is a phenomenon of coarticulation requiring explanation” (Fowler 1980: 114).

Coarticulatory effects may also be classified in terms of segmental classes that influence each other, namely consonants (C) and vowels (V). Thus the so-called ‘V-to-C coarticulation’ refers to the influence of a vowel on a consonant, in either direction (Recasens 1982: 114; 2002: 2828), as shown in the example *cool* [k^{hw}u:l̪], where the vowel [u] influences the consonant [k]. Another type is ‘C-to-V coarticulation’, where the consonant exerts influence on an adjacent vowel, like in cases of vowel nasalization. A particularly interesting case is the transconsonantal ‘V-to-V coarticulation’, initially described by Öhman (1966, 1967). Öhman found that in sequences V₁CV₂, where C is a stop consonant, the values of second formant transitions of V₁C and CV₂ depend not only on C and the adjacent V, but also on the identity of the transconsonantal vowel. Such a finding indicates that vowels in these cases are produced continuously, that is, the production of VCV utterances does not involve three linearly ordered successive articulatory gestures but rather a longer diphthong-like gesture on which a shorter consonantal gesture is superimposed. Not surprisingly then, cases of vowel harmony are sometimes also described as transconsonantal V-to-V coarticulation (e.g., Gafos 1999: §4.1). The fourth possibility is the ‘C-to-C coarticulation’, in which one consonant influences another. Hardcastle (1985: 253) provides electropalatographic evidence of C-to-C coarticulation in the word *weakling*, where the articulatory gestures of consonants [k] and [l] are overlapped during the period of about 28 ms. During that time the tongue is in contact with both the velum (related to [k]) and the alveolar ridge (related to [l]).

Different types of coarticulatory effects can also be related to different articulators involved in their production. Thus Farnetani and Recasens (2013: 316–317) recognize four different articulators involved in different types of coarticulation: lips, tongue, velum and larynx. Coarticulatory effects pertaining to perturbation of the lips give rise to ‘labial coarticulation’ (Farnetani 1999). Lip rounding (marked with ‘w’) and lip spreading (unmarked in transcription), as in *zoom* [z^wu:m] and *keel* [k^hi:l̪] respectively, fall under this rubric. Tongue displacements along the high/low and front/back dimensions are the essence of ‘lingual coarticulation’ (Recasens 1999). The mentioned case from Hardcastle (1985), where the back tongue body position required for the articulation of [k] is, for a brief time, overlaid

by the front tongue body position of [l], is an example of lingual coarticulation. ‘Velar coarticulation’, sometimes dubbed ‘velopharyngeal’ (e.g., Chafcouloff – Marchal 1999: 69), consists of nasality effects caused by the lowering of the velum. Nasalization of vowels adjacent to nasal consonants is a type velopharyngeal coarticulation and it works both in anticipatory (e.g., *sang* [sæ̃:ŋ]) and perseverative (e.g., *can you* [kʰænjũ]) directions. Cases in which coarticulatory effects are related to vocal fold abduction and adduction, especially to the property of voicing, are known as ‘laryngeal’ or simply ‘voicing coarticulation’ (Hoole et al. 1999). The perseverative effect of approximant devoicing, as in *please* [pʰi:z], is a type of laryngeal coarticulation.

Coarticulation is a phenomenon that does not only include the interactions between strictly adjacent segments, but also interactions between segments farther apart. By counting either the number of segments through which coarticulatory effects are spread, or by measuring the duration of such effects, we can determine the ‘scope’ or ‘span’ of coarticulation. A number of empirical findings related to coarticulatory scope exist. Öhman (1966), investigating V-to-V coarticulation in VCV clusters in Swedish, Russian and English, found that coarticulatory effects are independent of syllable boundaries. Similarly, Lisker (1978: 133) states that “lip-rounding and nasalization are segmental features of English that refuse to be contained within their ‘proper’ segmental boundaries, as these are commonly placed”. Amerman et al. (1970) note that speakers may anticipate an open vowel by beginning to lower the jaw during preceding consonants. Likewise, according to Benguerel and Cowan (1974) lip protrusion may be evident several consonants in advance of the rounded vowel for which it is required. They went on to show that in French labial coarticulation can extend up to 6 segments in anticipatory direction (Benguerel – Cowan 1974). Not surprisingly then, Amerman and Daniloff (1977) have shown that when a speaker articulates a CCV sequence, the tongue body may begin to move towards the vowel even during the first consonant. Laver (1994: 381) concludes that “the segmental domain of coarticulatory settings tends to vary with the type of setting involved”. In other words, the coarticulatory span of influence is hierarchically related to the type of coarticulation involved. Lingual coarticulation can be transsegmental, as shown by Amerman and Daniloff (1977), but is usually contained within the domain of the syllable. Velar coarticulation can cross both syllable and word boundaries: Moll and Daniloff (1971) showed that in English the velum can lower in anticipation of a nasal consonant several segments earlier, across such boundaries, provided that the influenced segments are all sonorants. Labial coarticulation seems to have the longest potential scope. Apart from Benguerel’s and Cowan’s (1974) demonstration of anticipatory labial coarticulation in French, Lubker et al. (1975), using electromyography, showed that in Swedish lip-rounding can start up to 600 ms ahead of a rounded vowel.

Causes for coarticulatory effects are various and not completely understood. Ashby (2011: 151) surmises that the function of coarticulation is “to create a continuum – a stream of speech without gaps”. One usual and often repeated cause for coarticulatory effects, especially for its perseverative direction, is the inertness of the articulatory organs (Daniloff – Hammarberg 1973; Hammarberg 1976). So in perseverative coarticulation the offset of an articulatory gesture extends in time, impinging on the upcoming gesture, because the articulator itself is too inert to move fast enough to complete the gesture entirely, before the next one is initiated. Also, factors such as the anatomical connections between articulators, the elasticity of articulator tissues, and aerodynamic factors are sometimes cited (e.g., Ohala

1981: 112) as further constraining the actions of the vocal apparatus. However, such explanations clearly do not hold for anticipatory coarticulation. Studies of Daniloff and Moll (1968) on labial coarticulation and of Moll and Daniloff (1971) on velar coarticulation revealed that the lowering of the velum in anticipation of a nasal consonant and the rounding of lips in anticipation of a rounded vowel can start up to four segments before the influencing one. These patterns clearly indicate that anticipatory coarticulation cannot be the product of inertia. Rather, the initiation of an articulatory gesture ahead of its time is explained by several different claims, some of which are experimentally confirmed. For one, the anticipation of articulatory gestures may be a production strategy that enables the articulatory organs to move fast enough (despite their inherent inertia) to produce segments and syllables at the rate of normal or faster-paced speech. So for example Daniloff (1973) claims that the tongue tip – the fastest of the articulators controlled by muscles – can perform only about 8 closures per second. Nevertheless, we are able to produce from 12 to 18 segments per second in normal speech, and up to 13 syllables in maximally fast speech (Škarić 1991: 298). Secondly, anticipatory coarticulation may be viewed as part of a general human tendency towards economy of movement, which is in constant conflict with communicative needs, or as Lindbloom (1990: 403) puts it: “Speakers can, and typically do, tune their performance according to communicative and situational demands, controlling the interplay between production-oriented factors on the one hand, and output-oriented constraints on the other”. In this sense, anticipation of articulatory gestures arises in order to minimize the movement of the articulators. Third, at the cognitive level, anticipatory coarticulation can be seen as evidence of the tendency for the brain to execute movements that have been planned ahead of time (Hardcastle 2006: 503; but see Farnetani – Recasens 2013: 341 for a brief discussion). Fourth, there may also be some perceptual motivation for anticipatory coarticulation. Thus, as a result of anticipatory coarticulation, acoustic information on an upcoming segment is available to the listener before that segment is articulated, and this prior information may facilitate more accurate perception than would be the case if all acoustic cues were confined within the temporal boundaries of that segment (Kühnert – Nolan 1999: 9; Fowler 2005: 200; Harrington et al. 2013: 246–247).

3. THEORIES AND MODELS OF COARTICULATION

3.1. Background

The basic concept of coarticulation was recognized at least as early as Henry Sweet’s *A Handbook of Phonetics* (1877). There Sweet (1877: 56) acknowledges the fact that, although it is useful to study sounds in isolation (analysis), in real speech sounds do not occur in isolation, hence the need to study speech as a “stream of incessant change” (synthesis):

We have hitherto considered sounds from purely analytical point of view, that is, each sound has been considered by itself, as if it were a fixed, isolated element. But in language sounds are combined together to form sentences, and many sounds only occur in certain fixed combinations. Hence the necessity for synthesis as well as analysis. Analysis regards each sound as a fixed stationary point, synthesis as a momentary point in a stream of incessant change. Synthesis looks mainly at the beginning and end of each

sound, as the points where it is linked on to other sounds, while analysis concerns itself only with the middle of the fully developed sound (Sweet 1977: 56).

However, it wasn't until the 1930s that the term 'coarticulation' was devised, presumably in Menzerath's and De Lacerda's book *Koartikulation, Steuerung und Lautabgrenzung* (1933), and it took further 30 years for the term to become widespread in phonetics, after the publication of influential works such as Lehiste (1964), Öhman (1966, 1967) and Fant (1968). The pioneering studies also include – as accounted by Kühnert and Nolan (1999: 11–16), and Farnetani and Recasens (2013: §2.1) – the so-called 'overlapping innervation theory' by Joos (1948), where he proposed that phonetic segments influence each other in such a way that the neural command for each segment is an invariant wave "that waxes and wanes smoothly" and that "waves for successive phones overlap in time" (Joos 1948: 109).

During 1960s, in light of considerable experimental evidence, Lindblom (1963a; 1963b) devised his influential 'target undershoot model', where he posited that a string of phonetic segments is realized by a string of commands issued at a very fast rate; since the articulators' maximum speed is restricted by biomechanical properties, they usually do not complete a given response before the onset of the next command. Thus the articulators often fail to reach their targets (i.e., they 'undershoot') in attempt to respond to more than one articulatory command simultaneously, which is in Lindblom's view the essence of coarticulation. Articulatory timing was further elaborated by Kozhevnikov and Christovich (1965), within the framework of what Bladon and Al-Bamerni (1976) later dubbed 'the articulatory syllable model'. There, based on a battery of elaborate tests on Russian speakers, the temporal extent of anticipatory (labial) coarticulation was taken as an indication of the size of the articulatory syllable: all the articulatory actions connected with one articulatory syllable are supposed to start at its beginning. As was already mentioned, in the 1960s Öhman (1966, 1967) developed his 'VCV model of coarticulation'. His most important finding was that the in V_1CV_2 sequences vowels influence each other, so that from V_1 to V_2 one diphthongal articulatory gesture is realized, upon which a consonantal gesture is superimposed. Lindblom's and Öhman's models have an important commonality: both presuppose that at the level of motor commands, the instructions to the articulators are invariant. However, the difference is that for Öhman the presence of coarticulation results from the co-occurrence of vocalic and consonantal instructions, whereas for Lindblom it results from economy constraints tending to minimize articulator displacements.

An important insight into coarticulation of that time was Bladon's and Al-Bamerni's (1976) concept of 'coarticulatory resistance'. They hypothesized that each allophone has a different value of coarticulatory resistance to which a speech production mechanism has access. Thus coarticulatory effects are allowed to spread until they are inhibited by a high resistance specification of some segment. The resistance values themselves were supposed to be determined by universal, language-specific and speaker-specific factors.¹ However, Kent and Minifie (1977: 120) were critical of such explanations, remarking that coarticulatory

¹ They wrote of this principle as follows: "Antagonistic vocal tract adjustments apart, coarticulation is inhibited only by 'coarticulation resistance' (CR) at some point in the succession of speech events. Each extrinsic allophone (and indeed each boundary condition) is assigned a value for CR by rules which may in some instances be language particular and in others quasi-universal. The CR value could be represented as a numerical coefficient attaching to a phonetic feature, say (3 CR), along the lines proposed by Chomsky & Halle (1968) for all other phonetic specifications in the phonetic system" (Bladon – Al-Bamerni 1976: 149).

resistance values seem to be based on many different poorly understood and quite general factors.

A significantly different approach in the study of coarticulation was undertaken in the 1970s within a more phonologically oriented framework, namely within generative phonology of that time and its theory of distinctive features (Chomsky – Halle 1968). These early ‘feature-based’ or ‘feature-sharing’ models of coarticulation, such as Daniloff and Hammarberg (1973) and Hammarberg (1976), incorporated coarticulation within the phonological component of the grammar, despite Chomsky’s and Halle’s (1968: 295) earlier explicit banishment of coarticulation from the grammar. The basic idea of such feature-based models was that the phonetic representation, which is the end-point of the phonological derivation and the feature-spreading process, and which serves as an input into the speech mechanism, necessarily includes both articulatory and coarticulatory specifications. Because the various features are not always specified for all given input units, the model is equipped with a look-ahead operator that scans the forthcoming units to determine the next specified value of a feature. For this reason, such models are dubbed ‘look-ahead models of coarticulation’. Coarticulation then, following instructions of from the grammar, smoothes out the differences between adjacent sounds so that the transitions between them are minimized. Such approaches, however, ran into a myriad of contradictory data, most notably its failure to predict the extensive nature of perseverative coarticulation in VCVCV sequences (Recasens 1989), and its inadequacy in dealing with contradictory underlying feature specifications for two different segments (Sussman – Westbury 1981). Therefore, feature-based models were forsaken for a time, until their revival in the late 1980s and 1990s.

From these developments three approaches to coarticulation emerged in more recent times. On one front Lindblom (1983; 1989; 1990) continued to develop the view in which coarticulation is a matter of speech economy and adaptive variability (§3.2); on the other front Keating (1985; 1988; 1990a; 1990b), in her ‘window model’, revived the feature-based approach to coarticulation; the third approach, developed jointly by Fowler (1977; 1980; 1985), Browman and Goldstein (1986; 1989; 1992), Recasens (2002) and others, sees coarticulation as a coproduction process to which articulatory gestures are the input. These three approaches, roughly speaking, comprise the contemporary theories and models of coarticulation.²

3.2. Speech Economy Theory

Speech, the optimal form of human communication, seems to be torn between two antagonistic tendencies: the successful relaying of information and the economy of effort in doing so. As a consequence of this simple truism, speech production is never an invariant process; it is always the resolution of the interaction between the listener-oriented requirements of successful communication and the speaker-oriented requirement of speech economy. Lindblom (1983; 1989) noticed this ever-changing equilibrium and termed it

² The distinction between a theory and a model, within coarticulatory research, is explained clearly by Farnetani and Recasens (1999: 31): „The aim of coarticulation theories is to explain coarticulation, i.e. account for its origin, nature and function, while coarticulation models are expected to predict the details of the process bridging the invariant and discrete units of representation to articulation and acoustics. Coarticulation theories are also expected to explain how listeners overcome coarticulatory variability and recover the underlying message”.

‘adaptive variability’: depending on situation and intent, speakers adapt their speech production to meet either of the requirements to a higher degree. So when a situation demands a high degree of phonetic precision (and thus more perceptual contrast), speakers are able to over-articulate; when this is not the case (e.g., in casual and informal speech), speakers turn to economy principles and under-articulate. This continuum of possibilities is termed ‘hyper-’ and ‘hypo-speech’, the first being the tendency to over-articulate, and the second to under-articulate (Lindblom 1990). Coarticulation plays a central role in such a theory because going from hyper-speech to hypo-speech the degree of perceptual contrast decreases, while the degree of coarticulation increases. Therefore, within the theory of speech economy coarticulation is seen as an instantiation of the hypo-speech principle: the tendency to economize articulatory movements and to propagate low-cost motor behavior.

Within this theoretical framework, a revised version of Lindblom’s target undershoot model was embedded. In the original work (Lindblom 1963a), coarticulatory effects were seen as resulting from the inability of the motor system to respond to articulatory commands issued in very short temporal intervals. The faster the speech production, the greater the extent of undershoot and reduction. The revised model (Moon – Lindblom 1994) was enriched with considerations of speech style. In this view, speech rate and coarticulatory effects are still proportionately related, but it is also shown that a deliberately clear style of speaking inhibits the degree of undershoot, despite the relatively high speech rate. This finding is consistent with the speech economy theory in that it presupposes that a clear speech style leads to a higher degree of perceptual contrast (leaning towards hyper-speech) and therefore entails less pronounced coarticulatory effects, while spontaneous speech style (leaning towards hypo-speech) adheres to economy principles and therefore entails more coarticulation. All in all, a low-cost strategy, characterized by prominent coarticulatory effects, is the norm in natural speech (Lindblom 1975).

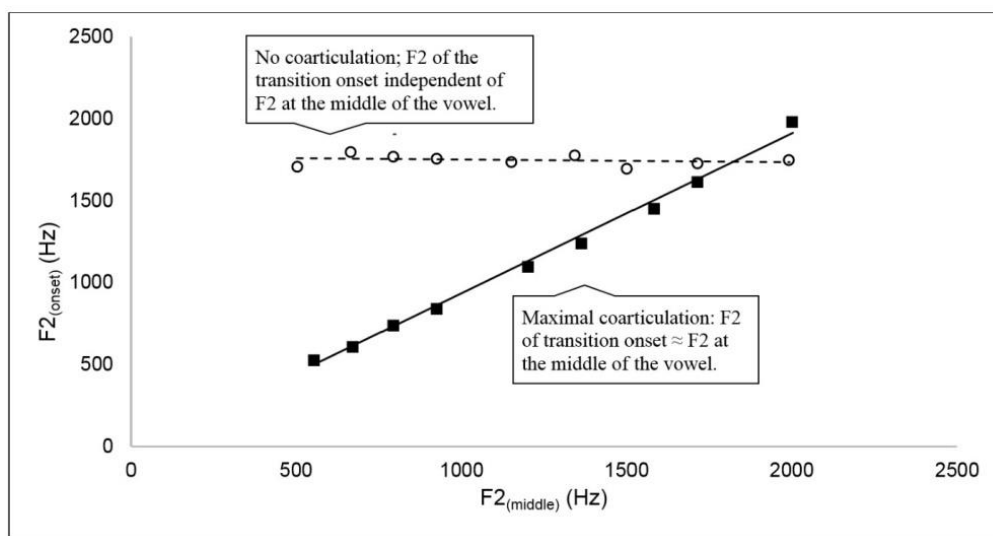


Figure 1. Schematic representation of locus equations for maximal and minimal C-to-V coarticulation.

An important property of these findings is that coarticulation can be measured in statistical terms, namely by the so-called ‘locus equations’. A locus equation can be defined as “a straight-line regression fit to coordinates formed by plotting onsets of F2 transitions in relation to their coarticulated F2 midpoint ‘target frequencies’” (Sussman et al. 1993: 1256). In other words, each production of a CV syllable yields one datapoint consisting of an F2 value measured at vowel onset and an F2 value measured in the middle of the vowel. When all these points are plotted in an $F2_{\text{(onset)}}$ by $F2_{\text{(middle)}}$ space, a best-fitting line is drawn through this cloud of points such that each point is as close to this line as possible (*Figure 1*). The equation corresponds to a linear function ‘ $F2_{\text{(onset)}} = k F2_{\text{(middle)}} + c$ ’, where ‘ k ’ is the slope and ‘ c ’ is the intercept of the regression line. The more that a consonant is influenced by a vowel, the less the formant transitions converge to a common locus and the greater the slope in the plane of vowel onset frequency by vowel target frequency. Thus in coarticulatory research, locus equations can be considered as indicators of the degree of coarticulation between a consonant and a following sonorant (Reetz – Jongman 2009: 204).

Krull (1987; 1989) used locus equations to quantify coarticulatory effects in CV syllables. She showed that labial-consonant loci³ undergo larger coarticulatory effects than dental-consonant loci and that coarticulation is larger in spontaneous speech than in words read in isolation. Moreover, Krull (1989) found for CVC syllables that prevocalic stop consonants undergo stronger anticipatory vowel effects than postvocalic consonants undergo carryover vowel effects.

3.3. Window Model of Coarticulation

As reviewed in §3.1, feature-based models held that coarticulation is a part of the grammar, presumably a part of its phonological component. However, it was difficult to reconcile the fact that phonology, as conceived at that time (1970s), operates with discrete and time-independent elements with the fact that coarticulatory effects entail continuous processes distributed in space and time. In the second half of the 1980s, Keating (1985; 1988; 1990b) proposed a new feature-based model of coarticulation, called the ‘window model’. She agreed with the view that phonological rules cannot account for the gradual nature of coarticulation, but contested the assumption that coarticulatory effects are solely a result of extra-linguistic, biomechanical properties of the speech apparatus. Instead, in Keating’s view, coarticulation is governed by phonetic rules of the grammar.

The standard rule-based approach to phonology, as laid out in Chomsky and Halle (1968), takes an underlying representation, either from the lexicon or from the output of the syntactic module, applies to it a set of ordered re-write rules, and thus derives the output representation. Both the underlying (phonological) and the output (phonetic) representation are specified in terms of binary features. Keating supplements this architecture with intermediate phonetic rules, presumably governing coarticulation, and localizes them after the domain of application of phonological rules.

³ A ‘locus frequency’, or simply ‘locus’, may generally be defined as the “apparent point of origin of the formant for each place of articulation” (Ladefoged – Johnson 2010: 199), the point of origin of the consonantal formants usually depending on the adjacent vowels.

The input to the phonetic rule domain is a potentially underspecified phonological representation. Thus every feature of every segment may be assigned either ‘+’, ‘–’ or ‘0’ as its value. The phonetic component of the grammar then interprets these features by assigning a ‘window’ to every feature of each segment. Windows serve as a conversion medium from categorical phonological elements to gradual phonetic elements. These windows represent all the possible physical (temporal and spatial) parameters a segment can take, i.e., the maximal range of variability within a segment. Specified features (‘+’ or ‘–’) are associated with narrow windows and allow for little contextual variation; unspecified features (‘0’) are associated with wide windows and allow for more variation. The exact width of a window is also determined for each language from information on the maximum amount of contextual variability observed in speech. This allows for all intermediate degrees between maximally narrow and maximally wide windows.

Windows pertaining to different segments are connected by interpolation functions, called ‘contours’. Contours represent actual articulator trajectories over time and are governed by principles of efficiency and minimal effort (and in that respect are in line with speech economy theory). In principle, the narrower the window for any feature, the greater the coarticulatory resistance. Narrow and displaced windows require more curvature of the contour, which results in less coarticulation (*Figure 2; b*). When the windows are wider and aligned, however, a relatively straight line can be interpolated, which suggests more coarticulation (*Figure 2; a*).

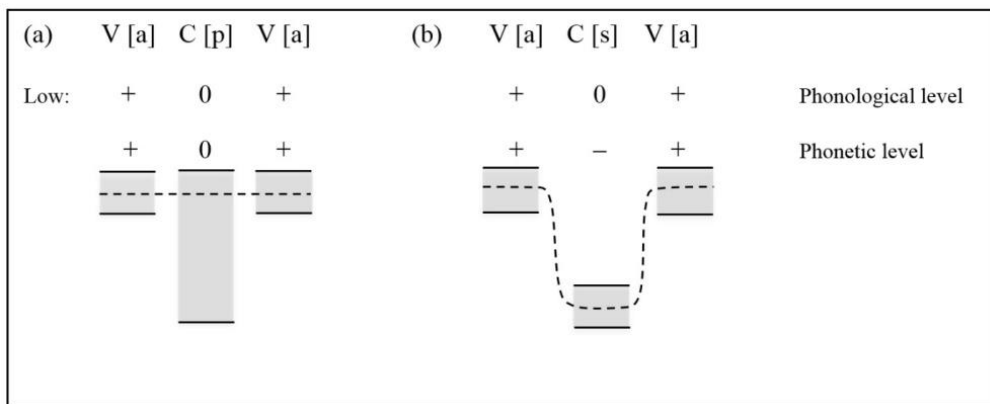


Figure 2. Window model of coarticulation.

In *Figure 2*, example (a) shows a VCV sequence, [apa], and its specification for the feature [low]. The consonant [p] is unspecified for that feature in the phonological representation (first row), and remains unspecified up to the phonetic level (second row). Because of its underspecification, the segment [p] is assigned a wide window, allowing greater contextual variability. Both vowels around [p] are specified as [+low], so they get a narrower window. Since [p] allows for greater variability, the most economical way to connect the three windows is by drawing a straight line through them. In articulatory terms, this translates to minimal adjustment of the relevant articulator (in this case the tongue body) during the production of [apa], and therefore to maximal coarticulation. Conversely, in example (b), the phonetic rule assigns a negative value (‘–’) to the phonologically unspecified

segment [s]. Because the segment is now phonetically specified, it gets a narrow window, and since the value is negative, the window is located at the bottom, misaligned with adjacent vowels. The most economical line that connects the three windows requires a lot of curvature. This translates to significant adjustment of the articulator during the production of [asa], and therefore minimal coarticulation.

Most of the research done within the window model of coarticulation aims to account for coarticulatory cross-language differences. Since in this model coarticulation is accounted for within the grammar, the differences in coarticulation between languages may originate either from phonology or from phonetics. So for example Cohn (1993), using the window model, reports different velar coarticulatory effects in English, where nasality is not phonemic, than in French, where nasality is phonemic. In nasalized English vowels, the shapes of the contours describe smooth trajectories from the (phonologically) non-nasal vowel to the nasal adjacent segment, suggesting the presence of velar coarticulatory effects that have a phonetic origin. However, vowel nasality is inherently phonological in French and is therefore categorical and not a result of phonetic coarticulatory effects. The plateau-like shape of the contour describing articulatory movement in French corroborates this claim.

Keating's model was not met with universal acclaim. Browman and Goldstein (1993: 53) criticized the disparity between phonological and phonetic (under)specification and the general lack of constrained interaction between those two domains. Manuel (1987; 1990) argued that the existence of coarticulatory cross-language differences does not automatically imply that coarticulation must be accounted for within the grammar, by showing that language-specific coarticulation patterns may be completely unrelated to phonological constraints. Furthermore, Liker et al. (2008: 185) showed that the window model does not correctly predict the effects of V-to-V lingual coarticulation, since different segments with the same specification for the feature [high] under experimental ultrasound investigation showed different coarticulatory resistance in the same intervocalic position.

3.4. Coproduction Theory

The main tenet of the 'coproduction theory' is that the basic phonological units and basic phonetic units are not categorically different (i.e., abstract and discrete vs. concrete and continuous), but instead virtually identical: in all cases those units are articulatory gestures. In other words, the assertion is that what a speaker implicitly knows about speech sounds (phonology) is not different from what a speaker uses during speech production (phonetics). From this hypothesis then follows that coarticulation is any occurrence of the overlapping of articulatory gestures. Such a theory had been put forward in works such as Fowler (1977; 1980; 1983; 1985), Bell-Berti and Harris (1981) and Fowler and Saltzman (1993).

The coproduction theory is motivated by the fact that the distinction between abstract and timeless phonological units and concrete phonetic units that are organized in time relies on the idea of 'extrinsic timing', which precludes the possibility of any coherent explanation of coarticulation. Extrinsic timing here is intended to mean that the externalization (via speech) of the phonological component of the grammar, which operates in time-independent units like segments, depends on some kind of 'translation' of these timeless units into a temporally organized set of (presumably completely different) units of speech, say gestures. However, since in this view time is excluded from the phonological representation, the spoken utterance

is given temporal coherence externally, from the process of actualization, which seems to suggest a significant dissociation between the phonological planning level (timeless) and its execution (timed) (Fowler 1980: 113, 117). The paradox that this leads to is that anticipatory coarticulation obviously includes some kind of planning and temporal distribution of articulatory gestures, but at the planning level time just does not exist, since phonological representations are timeless. To overcome this adversity, Fowler (1980: 122) proposes a theory of ‘internal timing’, where phonological representations also include the temporal dimension. Thus the proposed units of phonology are ‘articulatory gestures’: planned and linguistically significant actions of the structures of the vocal tract, serially ordered, context-independent and dynamical (Fowler – Saltzman 1993: 172). This theory became the core idea behind Articulatory Phonology of Browman and Goldstein (1986; 1989; 1992), which propounds the claim that “phonology is a set of relations among physically real events, a characterization of the systems and patterns that these events, the gestures, enter into” (Browman – Goldstein 1992: 23), where gestures “are basic units of contrast among lexical items as well as units of articulatory action” (*ibid.*) that “can be used to capture both categorical and gradient information” (*ibid.*).

The coproduction theory adopts the basic insights of internal timing and Articulatory Phonology, namely that the input to any model of coarticulation are the dynamical and invariant articulatory gestures. It is thus proposed that gestures are not modified when actualized in speech. The intrinsic temporal structure of the gestures allows them to overlap in time, so that they are not altered by the context, but rather ‘coproduced’ with it (*Figure 3*). ‘Coproduction’ then entails the temporal overlap of articulatory gestures and serves as an explanatory theory of coarticulation.

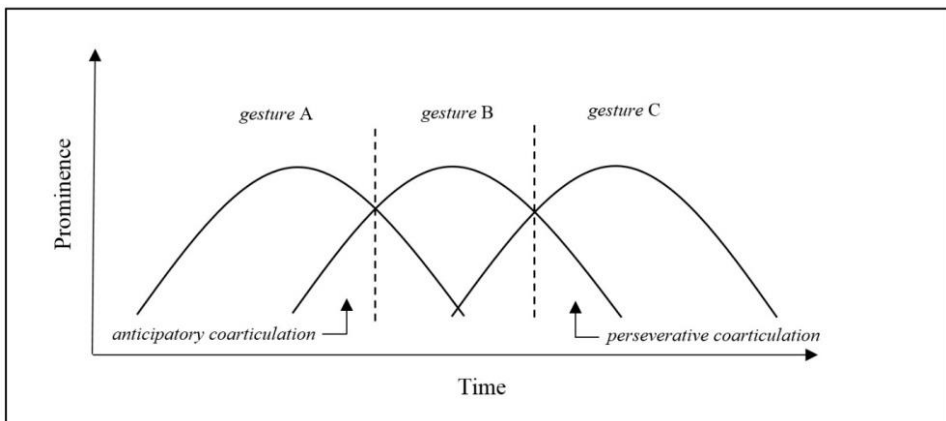


Figure 3. Coarticulation as coproduction of articulatory gestures (adapted from Fowler and Saltzman 1993: 184).

As can be seen from *Figure 3*, both anticipatory and perseverative effects are accounted for by the same principle of gestural overlap. The prominence of a gesture increases and decreases in time and so does its influence on the vocal tract (and by extension on the acoustic signal). The dashed vertical lines delimit the intervals in which a certain gesture is most prominent. During the waning of gesture A, the production of gesture B is initiated. The time from the initiation of gesture B to the time where it becomes more prominent than

gesture A represents the scope of anticipatory coarticulation, and the time between where gesture C becomes more prominent than gesture B and the time where the realization of gesture B is finished represents the scope of perseverative coarticulation. Logically then, the bigger the gestural overlap, the larger the coarticulatory effects, while the degree of gestural overlap is determined at the level of cognitive planning.

The most prominent model of coarticulation developed within the coproduction theory is the ‘degree of articulatory constraint (DAC) model’ (Recasens et al. 1997; Recasens – Pallarès 2001; Recasens 2002; 2014), which aims to predict the scope and direction of lingual coarticulation by taking into account the demands imposed on the tongue dorsum during speech production. Different degrees of articulatory constraint, called ‘DAC values’, are attributed to consonants and vowels based on the involvement of the tongue dorsum in forming a constriction in the vocal tract during their production (Recasens et al. 1997: 545). A minimal DAC value (= 1) is attributed to segments which do not require any movement of the tongue dorsum: e.g., bilabials [p, b, m], labiodentals [f, v], vowel [ə]. An intermediate DAC value (= 2) is assigned to segments for the production of which the tongue dorsum is not directly involved in closure or constriction formation but is somewhat constrained by movements of the primary articulator: e.g., alveolars [t, d, n, s], low vowel [a] etc. A maximal DAC value (= 3) is assigned to segments primarily articulated by the tongue dorsum: e.g., alveolopalatals [ʃ, ʒ], palatals [j, ɲ, ʎ], velars [k, g, x], high vowel [i]. In other words, the more prominent and precise the requirements on the tongue dorsum during the formation of the constriction, the more the segments are constrained, while less constrained segments impose less strict requirements on the tongue dorsum. The concepts of ‘coarticulatory resistance’ and ‘coarticulatory dominance’ follow logically from this: a more constrained segment (higher DAC value) is more resistant to coarticulatory effects and exerts more prominent coarticulatory effects on adjacent phonetic segments, while a less constrained segment (lower DAC value) is less sensitive and less dominant in this respect (Recasens – Pallarès 2001: 274). A great deal of experimental data has been gathered using the DAC model, such as investigation of the relationship between coarticulation, assimilation and blending (Recasens – Pallarès 2001), studies of coarticulatory direction (Recasens 2002), scope of coarticulation (Recasens et al. 1997), coarticulatory resistance (Fowler – Brancazio 2000; Zharkova 2007), the relation of coarticulation and sound change in Romance languages (Recasens 2014) etc. An obvious limitation of the model is its applicability to effects regarding only lingual coarticulation.

4. MEASURING COARTICULATION

Precise data on various coarticulatory effects can be gathered by measuring certain parts of the vocal apparatus during speech. These measurements may be either ‘direct’ or ‘indirect’. Direct measurements come from instruments that are in contact with the measured structure (e.g., electropalatography), while indirect measurements come from instruments that are remote from the structures of interest (e.g., imaging techniques) (Stone 2013: 9). While many different techniques may be used for obtaining data relevant to coarticulation, three procedures are used frequently: imaging techniques (especially ultrasound), electropalatography and electromyography.

4.1. Imaging Techniques

Imaging techniques register internal movements without directly contacting the structures. An obvious advantage of such techniques is that they are noninvasive and unobtrusive, not impinging upon normal speech production. Also, they provide an image of the entire structure (such as the tongue), rather than single points on the structure. The four common imaging methods in research of speech production are X-ray, computed tomography (CT), magnetic resonance imaging (MRI) and ultrasound. Of these, the ultrasound has proven to be the most productive method in research of coarticulation.

In a lateral X-ray image, an X-ray beam (a ray of light with the wavelength ranging from 0.01 to 10 nanometers) is projected on one side of the head. The rays then pass through all the tissue in the head and are recorded as an image on a plate on the other side. In X-ray, soft tissue structures like the tongue are often obscured by harder structures like the jaw and teeth. Another, more significant drawback is that potential radiation hazards from long-term exposure to X-ray beams preclude the possibility of more extensive measuring. Although X-ray has played an important part in research of speech production (e.g., Kent 1972), it was seldom used in coarticulatory research due to its very low temporal resolution. A notable case is Wood (1996), who used X-ray to elucidate the differences between palatalization and coarticulation in Bulgarian, and to show that gestural programming for this case of palatalization is better described as coproduction of gestures than as feature spreading.

Computed tomography (CT) also uses X-rays, but in a significantly different manner: it records ‘slices’ of tissue as thin as 0,5 mm. A CT scan can image soft tissue more clearly than X-ray because the scanner rotates around the body taking multiple images, from different angles, of a single section of the body, and then creates a composite image. However, a CT still uses X-ray beams, so radiation exposure is still an issue. The temporal resolution is somewhat faster – about 15 images per seconds – but still not fast enough to provide for real time speech research, therefore it is also rarely an instrument of choice to phoneticians.

Magnetic Resonance Imaging (MRI) uses a magnetic field and radio waves to image a section of the tissue (see Stone 2013: 14–21 for a more detailed account of how MRI works). Numerous MRI procedures are available, such as high-resolution MRI, cine MRI, functional MRI etc., all using the same hardware, only in different ways. Although some phonetic research had been done using MRI (e.g., Story et al. 1996), very few investigations into coarticulation have actually used experimental MRI techniques (Stone 1999: 255), most likely due to its slow response time and low visual resolution. However, Kim (2012), using cine MRI, interpreted Korean palatalization as a gradual phonetic phenomenon, i.e., a type of V-to-V coarticulation, rather than a common phonological process involving consonants and front vowels.

Ultrasound produces an image by using reflective properties of sound waves (Stone 1999: 252). A sound wave (1 MHz frequency or higher) is emitted from the ultrasound’s transducer; it travels through soft tissue, and reflects back when it reaches an interface with a structure of different density, like bone or air. The reflected echoes are received by the transducer, processed by computer and displayed as a video image. By placing the probe under the chin (stabilizing it either by hand or by an immobilization kit), a clear image of the tongue body (contour of its outer rim) is acquired (*Figure 4*), which is appropriate for phonetic research. The sampling rate of fastest ultrasounds is about 90 Hz, adequate for most lingual processes, but too slow for the study of real-time laryngeal phenomena. Thus ultrasound imaging is

usually constrained to research into lingual coarticulation. For example, Liker et al. (2008) used ultrasound to test the predictive capabilities of the window model versus the DAC model of coarticulation in accounting for lingual V-to-V coarticulation. Zharkova and Hewlett (2009) used ultrasound to measure lingual coarticulation in English and showed that the tongue contour during [t] adapts to the influence of the neighboring vowels approximately three times more than the tongue contour during [a] adapts to the influence of the neighboring consonants. Of all the imaging techniques used in research of coarticulation, the ultrasound seems to be the most productive one.

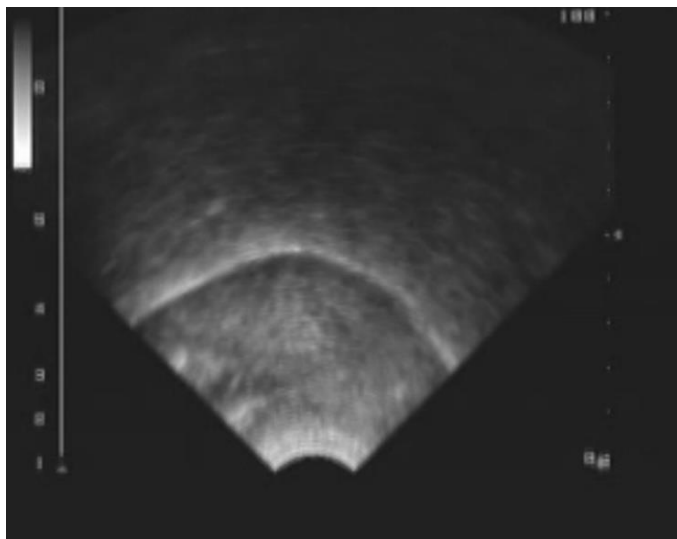


Figure 4. Ultrasound image of the tongue body, shown in the midsagittal plane. The image was taken by *Shimadzu SDU-450X* ultrasound system with the signal of 3.5 MHz and 10 cm imaging depth. The narrow bottom part of the picture is where the transducer is pressed against the soft tissue beneath the chin. The white curved line is the interface between the tongue (beneath the white line) and air (above the white line), therefore the white line represents the outer contour of the tongue body. To the left is the tongue tip, which is partially obscured by the transducer's arc; but even if the arc were extended to the left, the tip would not be completely visible because of the mandible.

4.2. Electropalatography

'Electropalatography' (EPG) is a technique used for recording the contact that the tongue makes with the hard palate during continuous speech (Gibbon – Nicholaidis 1999: 229). EPG is an invasive technique inasmuch that the measuring equipment enters the human body, but it is completely painless and impinges upon normal speech production minimally. It requires the construction of an artificial palate, molded to fit precisely the speaker's hard palate, that is layered with numerous individual electrodes (i.e., sensors) that register the tongue-palate contact. The electrodes conduct this signal through the wires that lead out of the mouth and to a computer which generates multiple images of the contact. There are approx. 60 scanning electrodes on an artificial palate (the exact number depends on the manufacturer) (Wrench 2007: 3), with the sampling rate up to 200 Hz (Stone 2013: 29). Because of its relatively fast

sampling rate and high spatial resolution, EPG has a long and rich history in phonetic research, starting with Hardcastle (1972), and was easily extended to research of coarticulation.

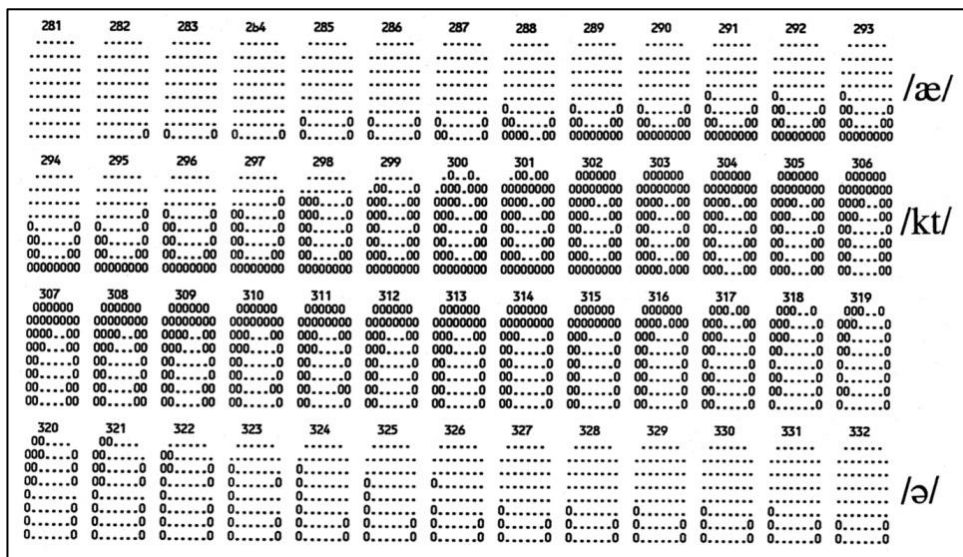


Figure 5. Electropalatographic image of pronunciation of the word actor (From Gibbon – Nicolaidis (1999) Palatography. In Hardcastle, W. J., Hewlett, N. (eds.) *Coarticulation – Theory, Data and Techniques*. 229–245. p. 235.).

Figure 5 shows an EPG image of pronunciation of the word *actor*. The sampling rate is 100 Hz, therefore the interval between individual frames is 10 ms. The frames are ordered in rows from left to right, with the alveolar region at the top and the velar region at the bottom. Tongue-palate contact is indicated by zeroes. The articulation of [k] starts at frame 289, where a complete closure at the velum can be observed. However, while the velar closure is still maintained, an alveolar closure related to [t] is also formed, around frame 301. Through frames 301 and 302 both closures are maintained for about 20 ms. Then from frame 303 the velar closure starts to release, while only the alveolar closure is maintained, up to frame 316. From there on, there is a rapid decrease in tongue-palate contact during production of schwa. Coarticulatory effects are most prominent during frames 301 and 302, where both a velar and an alveolar articulatory gesture are maintained for a brief time. However, anticipatory effects can also be observed: during complete velar closure, the onset of the alveolar gesture is building up, starting from around frame 294. After the start of the velar release (frame 303), the velar gesture gradually starts to wane, but still exerts its influence on the vocal tract for several frames, which implies perseverative coarticulation as well.

A great deal of research into coarticulation had been done using electropalatography. Without any attempt at exhaustiveness, we can cite such examples as Recasens' extensive work on lingual coarticulation (later within the DAC model) and studies of coarticulatory effects in particular languages, such as Hardcastle (1994; 1995) and Byrd (1996) for English, Kohler (1976) for German, Marchal (1988) for French, and Farnetani (1990) for Italian. Recasens (1990) used EPG data to show that vowels differ in coarticulatory resistance from

effects exerted by adjacent consonants: consonant-dependent effects were shown to be larger upon those articulatory regions which do not intervene in the formation of a vowel constriction, therefore those lingual regions which are not involved in the formation of a vocalic constriction are left freer to coarticulate than those which are actively involved. Recasens et al. (1998) revealed in VIV sequences more prominent C-to-V effects for the Catalan dark [ɫ] than for German clear [l], more so in the [i] context than in the [a] context, which is in agreement with the existence of high lingual requirements on the formation of two constriction places for dark [ɫ]. Electropalatographic insights into coarticulation remain to be a highly productive research avenue.

It is worth mentioning that EPG and ultrasound show complementary data: EPG shows the place on the palate in contact with the tongue, but without showing which part of the tongue was used to make that contact; ultrasound shows the shape and position of the tongue during articulation, but without showing its relation to the palate. The main drawback of EPG is that it requires a specific custom-made artificial palate for every different speaker, which makes mass data collecting an expensive endeavor.

4.3. Electromyography

‘Electromyography’ (EMG) is a technique for recording the changes in electrical activity within muscles (Hardcastle 1999: 270). EMG allows for the study of neuromuscular mechanisms that underlie the production of articulatory gestures during speech. The key part of the EMG system are the electrodes which detect ‘muscle action potentials’: the electrical activity accompanying muscle contraction. There are several types of electrodes, but those commonly used in phonetic research are either ‘hooked-wire’ or ‘surface’ electrodes. Hooked-wire electrodes are inserted into the body by a needle, after a local anesthetic has been applied. They record signals from individual ‘motor units’ (a single motor neuron and the group of muscle fibers which it innervates), identified as spikes in the electrical pattern, and are most useful for investigating muscles that are not close to the surface of the articulator, such as the *genioglossus* muscle of the tongue (Raphael et al. 2011: 288). Surface electrodes are used to study the response of the muscle as a whole, because they record the gross muscle activity from a large number of motor units. They are applied to an articulatory structure either by an adhesive substance or by suction (Harris et al. 1964; Allen – Lubker – Harrison 1972), and are useful for investigating muscles whose fibers are just below the skin, such as the *orbicularis oris* muscle of the lips.

Besides providing a measure of the strength of muscle contraction, EMG also provides temporal measures of muscle activity, such as the duration of muscle contractions and the relative timing of the activity of different muscles contributing to the movements of the structures used in speech production. The recording process is relatively straightforward: the electrodes register the electric potential and send the signal to a computer where it is displayed. The interpretation of the results is, however, much more complex, especially in terms of the functions of particular muscles and the resultant movements of speech organs: “It is extremely difficult to attribute a particular EMG output to a function in a given muscle and even more difficult to infer movement of a speech organ from such an output” (Hardcastle 1999: 273). A comprehensive introduction to recording and interpreting EMG signals is given by Loeb and Gans (1986).

How is data obtained by EMG relevant to a phonetician? Speech researchers want to know the relationship between the neuromuscular activity needed to produce speech sounds and the actual movement of particular speech organs that produced those sounds. Quite generally, EMG provides insight into the complex control mechanism used in speech production. It has been employed in the study of coarticulatory effects as well (see Farnetani 1999: 154–155 and Hardcastle 1999: 274 for extensive references). For example, Lubker and Gay (1982) used EMG to compare anticipatory labial coarticulation in Swedish and American English. They showed that the rounded vowels of Swedish were systematically produced with more extensive and more precise lip-protrusion movements than the rounded vowel of English, which suggests “that Swedish and American English speakers have learned different motor-programming goals” (Lubker – Gay 1982: 437). Boyce (1990) used EMG to compare patterns of protrusion movements for upper and lower lip for speakers of English and Turkish. They measured EMG activity in the orbicularis oris muscle and showed that Turkish speakers produce “plateau” patterns of movement rather than “trough” patterns, and unimodal rather than bimodal patterns of EMG activity, which suggests that “English and Turkish may have different modes of coarticulatory organization” (Boyce 1990: 2584).

The main drawbacks of hooked-wire electrodes is that they provide certain discomfort for the subjects which may affect the naturalness of their speech, and that specialist knowledge is needed for the insertion procedure, in order to avoid piercing any blood vessels. On the other hand, while surface electrodes are easy to apply and are non-invasive, their use is restricted to the investigation of superficial muscles such as the *orbicularis oris*, and there are substantial difficulties in attaching them onto moist intraoral surfaces.

5. COARTICULATION AND ASSIMILATION

In phonological literature ‘assimilation’ is usually defined as a phonological alternation in which two sounds become more alike (Lass 1984: 171; Zsiga 2013: 1919). This definition is, however, strikingly similar to any general definition of coarticulation (see §2), thus the question of the relation between these two phenomena naturally arises. Many different answers to this question have been proposed in the literature and here we will review some of them.

One simple explanation is offered by Laver (2001: 176):

(...) given the rate that segments follow each other in a stream of speech, (...) one segment may influence the articulatory characteristics of segments yet to be spoken, or be influenced by those that precede it. When such an influence crosses a word boundary, it is said to result in assimilation; when it is restricted to word-internal action, it is said to show coarticulation.

This explanation, however, is not quite consistent with concrete data. In Croatian, for example, voicing assimilation occurs automatically and invariably both within a single (tonic) word and within a phonological word (a tonic word plus a clitic) as shown in (1a–b), but is blocked between different phonological words (1c).

(1) Croatian voicing assimilation

- a Word internal
 - /s-broj-i-ti/ → [zbrojiti] 'add up'
 - /svat-b-a/ → [svadba] 'wedding'
 - /glad-k-a/ → [glatka] 'smooth' (fem.)
 - /vrab-ts-a/ → [vraptsa] 'sparrow' (gen. pl.)
- b Within a phonological word
 - /s drv-ima/ → [zdrvima] 'with wood'
 - /kod kute-e/ → [kotkutee] 'at home'
 - /grax bi/ → [graybi] 'beans would'
 - /slog tee/ → [sloktee] 'syllable will'
- c Between phonological words
 - /grax živi/ → [grax živi] 'beans live'
 - /slog pada/ → [slog pada] 'syllable falls'

Example (1), and many other such examples in different languages (see Zsiga 2013: 1921–1922 for Russian and Korean), shows that assimilation operates both word-internally and across word boundary, without any significant differences. This suggests that using the type of morpheme juncture as a criterion for distinguishing between assimilation and coarticulation is not more than an arbitrary decision.

Another explanation pertains to different types of transcription:

The general convention in phonetics is to term coarticulation anything that will only show up in narrow phonetic transcription, reserving the term assimilation for changes involving a complete change of target. Often, assimilations are so extreme that they can be recorded in a much broader transcription, a phonemic transcription (Ashby 2011: 152).

In this view, the relation between coarticulation and assimilation is a matter of magnitude of the change. When a change is significant enough to be recorded in a phonological transcription, it is an assimilation; otherwise it is coarticulation and it may only be evident in phonetic transcription. In other words, what counts as one of these processes depends on the availability of symbols to indicate it and on conventional judgements about its auditory or linguistic significance. What is a “significant” change in this case, and what “significant enough” generally means in phonology and phonetics, has no definitive answer (though see below) and directs any coherent contemplation of how this criterion might distinguish between assimilation and coarticulation straight into the fundamental question of the relation between phonology and phonetics. Indeed, the matter of the relation between assimilation and coarticulation penetrates to the very core of long-standing dichotomies such as ‘phonetics and phonology’ (Beckman 1999), ‘gradient and categorical’ (Ernestus 2011), and perhaps ultimately ‘language and speech’, that is ‘*langue* and *parole*’ in structuralist terms (de Saussure 1959 [1916]: 9ff), ‘language competence and performance’ in traditional generative terms (Chomsky 1965: 4) and ‘I-language and E-language’ in more recent generative terms (Chomsky 1986: 22; 2013: 35). It has notably been argued that assimilation is a linguistic process pertaining to segmental phonological units, while coarticulation is a speech process pertaining to the gradual nature of phonetic elements (Chomsky and Halle 1968). As an extension of this view, the distinction between coarticulation and assimilation

may be delineated on theoretical grounds: phonology, being a certain kind of implicit knowledge, a part of language competence and therefore ontogenetically prior to phonetics, encapsulates assimilation entirely, and thus assimilation can be defined within it as an alternation (an unfaithful mapping of distinctive features) imposed upon an underlying representation and apparent at the level of a derived phonetic representation; conversely, coarticulation, belonging to the phonetic domain, occurs subsequently in language performance (namely, speech) and may be viewed as an extra-linguistic process. Thus assimilation in principle entails a change of at least one distinctive feature, whereby coarticulation entails articulatory adaptations that are grammatically (phonologically) insignificant, in no way pertaining to the system of distinctive features. Also, it is fairly well established that coarticulation to a large extent depends on factors unrelated to language (in the sense of mind-internal linguistic competence, the so-called 'I-language'), factors such as speaking style (Lindblom – Lindgren 1985) and speech rate (Hardcastle 1985). On the other hand, there seems to be no evidence that assimilation depends on any of these factors. However, this position is by no means universal and some influential theories contest most aspects of such an approach.

Attempts have been made (e.g., Hammarberg 1976; 1982; Keating 1990b) to integrate all that coarticulation stands for into the grammar, presumably into its phonological component, and to describe and explain coarticulation with the same atoms of representation used to model assimilation, namely with distinctive features. Keating (1990b) divides the phonological component of the grammar into phonological and phonetic parts, the former part consisting of phonological rules and representations, and the latter part, applying on the output of the former part, consisting of phonetic rules and representations.⁴ In this view, any kind of feature-sharing process between segments is coarticulation, and the type of rules that govern this feature-sharing process determines whether coarticulation is phonological (i.e., assimilation) or phonetic:

Phonological rules of feature-spreading will produce partial or complete overlapping of segments, including assimilation over long spans. Phonological rules nonetheless have only limited access to segment-internal events. Phonetic rules, on the other hand, can (and more typically will) affect portions of segments, or affect them only slightly, or cause them to vary continuously in quality (Keating 1990b: 452).

Contrary to this position, the theory of Articulatory Phonology (see §3.4) argues that assimilation can be accounted for in terms of differences in articulatory organization and gestural overlap, without invoking any phonological feature change. Browman and Goldstein (1990) showed that a coronal closing gesture is still present in English phrases which sound as though a coronal nasal had become labial: for example, in the phrase *seven plus*, the [n] is not changed from [coronal] to [labial], but is overlapped by the following [p], and [n] and [p] articulated together sound like [m], as in *se[vmp]lus*. Browman (1995) argues that apparently categorical assimilations are just endpoints of a gradient distribution and a total case of

⁴ "Phonological representations, which are essentially static and categorical, can be acted on by phonological rules, which change or rearrange the features which comprise segments. The output phonological representations can be acted on by phonetic rules, which interpret these features in time and space. Phonetic rules can thus, for example, assign a segment only a slight amount of some property, or assign an amount that changes over time during the segment" (Keating 1990b: 452).

gestural overlap. In other words, all assimilation is a kind of coarticulation. However, not all researchers agree that assimilation processes are describable in terms of gradual gestural overlap. Ladd and Scobbie (2003: 16) provide evidence that vowel assimilation at word boundaries in Sardinian is indeed categorical and conclude “that gestural overlap is on the whole not a suitable model of most of the assimilatory external sandhi phenomena in Sardinian, and that accounts of gestural overlap in some cases of English external sandhi cannot be carried over into all aspects of post-lexical phonology”.

Fowler (1990: §28.2) proposes a listener-oriented basis for discriminating between coarticulation and assimilation. When a listener perceives a sound change, i.e., when a sound change is “significant enough”,⁵ it is grammatically relevant, phonological, and therefore an assimilation. When a listener cannot be made to perceive a sound change, even though it can be proven to exist by instrumental measurement, the change is grammatically irrelevant, and therefore a coarticulation. Fowler (1990: 484) asserts that the “difference in listeners’ perceptions of coarticulation and assimilation reflects a real difference in the phenomena being described”, and remarks (op. cit.: 483) that “many processes identified as coarticulatory will count as nongrammatical, whereas true assimilations are grammatical”.

All in all, the theoretical and practical explorations of assimilation and coarticulation center around the question of whether these are two systematically different phenomena, related to different domains of the language faculty (i.e., to phonology and phonetics), or merely different instantiations of a single processes. In the first view assimilation is a part of phonology, and is therefore a mental process with results observable in the physical phonetic output,⁶ while coarticulation is a part of phonetics with no relevance for the language system. Alternatively, assimilation may be viewed as a type of coarticulation, perhaps as its endpoint, but with lines between them in practice mostly blurred, if present at all. The matter is far from being resolved and will indubitably motivate extensive further research.

CONCLUSION

It is not possible to delve as deeply as one would like into various aspects of coarticulation covered in this chapter, therefore we have attempted to counterbalance the resulting superficiality by citing some of the most influential literature. An indispensable source of information on coarticulation is provided in Hardcastle and Hewlett (1999) and Farnetani and Recasens (2013), and of course in the references cited therein.

One conclusion that can reasonably be maintained is that coarticulation is a universal characteristic of speech and this chapter has, hopefully, demonstrated that given real life speech – all articulation is coarticulation. We have attempted to provide some general ideas about what the term ‘coarticulation’ denotes and how it can be classified (§2). Various types of coarticulatory effects testify to the incredible complexity of speech production. Because of its ubiquitous nature in continuous speech, coarticulation continues to be a central research area in experimental and theoretical articulatory phonetics. A number of different theories and

⁵ “For example, no matter how hard we concentrate, we cannot make ourselves aware of the acoustic differences between the ‘intrinsic allophones’ (...) of /d/ in /di/ and /du/. (...) In contrast, we can be made aware of the durational differences between the vowels in *heat* and *heed*” (Fowler 1990: 483).

⁶ This position is in agreement with classic generative conceptions of phonology, namely that “all the work in phonology is internal to the mind/brain” (Chomsky 2012: 48).

models attempt to account for the nature and origins of coarticulation and to predict various aspects of its effects (§3). The theory of adaptive variability sees coarticulation as a consequence of speech economy. For models that have emanated from the theory of generative phonology, like the window model, coarticulation is a set of rules that converts categorical elements into gradual elements and serves as a link between language competence and performance. For coproduction theory coarticulation is the temporal overlap of articulatory gestures. The development of all these theories and models of coarticulation depends crucially on data provided by a number of different experimental methods (§4). These various techniques reflect the fact that contemporary phonetics is mainly an experimental science. Research into coarticulation also produces far-reaching implications for phonological theory and for the relationship between the mind-internal knowledge of language and its externalization through speech. These implications are particularly prominent in the complex relationship between assimilation and coarticulation (§5).

The existence of different and usually exclusive approaches to coarticulation and the fact that coarticulation remains a productive field of inquiry in phonetics permits us from arriving at specific and definitive conclusions. However, if one conclusion holds true universally, it is surely that “speaking is coarticulating gestures” (Farnetani – Recasens 2013: 320).

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Chapter 33

SPEECH INTERVENTION FOR CORRECTING COMPENSATORY ARTICULATION IN CHILDREN WITH CLEFT PALATE

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ABSTRACT

Velopharyngeal Insufficiency (VPI) is a disorder of resonance and speech which affect all individuals with cleft palate. VPI can occur with or without compensatory articulation errors. Several intervention methods have been reported for treating compensatory articulation errors in patients with cleft palate. Two of the most commonly used of these intervention modalities are a phonologic based intervention and a phonetic or articulatory intervention. Although both modalities have been reported as being effective, it seems that a phonologically based intervention can more readily enhance to carry over the adequate articulation placement into connected speech. The reason for this advantage is that phonology addresses not only the peripheral aspects of speech production but higher levels of linguistic organization. Thus, addressing compensatory articulation errors in a more linguistically based context, can usually be more effective for acquiring and using an adequate articulation placement during connected speech.

It is necessary to appropriately classify the severity of the compensatory articulation errors, with especial focus on the response to speech pathology intervention strategies. Also, the selection of phonologically based strategies to be used during the speech intervention, seem to enhance effectiveness of the specific strategies for correcting articulation placement.

This chapter addresses how an approach based on phonological principles can be a reliable method for the speech intervention in children with cleft palate and compensatory articulation errors. In this chapter, a categorically stratified scale for classifying compensatory articulation errors according to severity and response to therapy is

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described. Finally, some strategies for speech intervention which are more suitable for a phonological and linguistic intervention are presented. The chapter explains how is that selecting the strategies to be used during the intervention according to the severity of the articulation errors seem to increase their effectiveness.

Keywords: speech, treatment, cleft palate, language

INTRODUCTION

Articulation disorders in children are typically considered to be either phonologic or phonetic in nature. Phonetic disorders are related with inadequate speech development with anatomic, physiologic and/or motor deficits. In other words, the abnormalities involve either voicing or articulation placement and manner. In contrast, phonologic disorders are considered to be linguistically based and they seem to be reflecting abnormal processing in the organization and representation of the phoneme system of the language. [1]

Several authors have described that children with cleft palate are at risk for phonetic based problems due to the abnormal vocal tract structure inherent to the cleft. One of the main valves of the vocal tract is entirely dysfunctional, the velopharyngeal sphincter (VS). However, children with cleft palate can be also at risk for phonologic disorders. That is, the problem is not only structural but it involves the development and establishment of the system of rules which regulates speech production. [2]

Speech disorders caused by a palatal cleft, which affects the development of the phonologic rules system occurring between 0 – 18 months of age, are in the end a consequence of the cleft. It has been reported that babbling and cooing during the first months of life are an important element for the appropriate elaboration of the phonologic rule system in the central nervous system. These vocal tract rudimentary movements for producing sounds are being produced in abnormal conditions, that is, in the presence of a defective velopharyngeal valve for regulating intraoral pressure and nasal resonance. The abnormal vocal tract movements secondary to the defective structure, in the initial stages of development, produce a phonetic based disorder. However, over time, these errors become incorporated into the developing phonologic rule system and the disorder becomes phonologic. [2, 3]

Phonology is a much broader concept than articulation. Phonology refers to the higher component that governs the manner in which speech sounds are patterned in order to produce speech. It involves the vast repertoire of phonemes that can be found in any language. In other words, the involvement of those sounds which function in the language for signaling a change in meaning. Phonology also involves alternations which are undergone by phonemes when they occur in different phonetic contexts and combinations of sounds that occur in language. [1, 2]

Speech intervention for a child with cleft palate using a phonetic or peripheral approach addresses learning articulation placement, voicing and manner as specific times of motor learning. Usually in a phonetic approach some strategies as the use of minimum pairs, intense repetition and a sequential approach going from syllables to words to sentences, focusing on phonemes in different positions (initial, middle and final) are used. Moreover, the errors in articulation are considered as disruptions at some level of the relatively peripheral articulatory

movements of the vocal tract. Therefore, some intervention procedures are based almost exclusively on the notion that the articulation deficits are caused by a faulty control of the articulators. In contrast, when a phonologic approach is used, children must learn more than just a set of complex articulatory patterns associated with words. They must learn a complete phonologic system. Furthermore, several reports describe that some central, cognitive-phonological processing must be included in any description of phonological acquisition. [2 - 5]

Children learn speech by gradually trying to approximate to the speech sounds that are being presented to them by the significant adults around them. In cases of cleft palate, besides the resonance and intraoral pressure deficits inherent to a cleft of the secondary palate, some children deviate in an aberrant developmental pathway. In an attempt to approximate to the production of some sounds but facing a great obstacle, that is, a Velopharyngeal Insufficiency (VPI) secondary to a palatal cleft, they start producing sounds which have no relationship with the meaningful sounds of language. Examples of these sounds are substitutions of glottal stops by plosive phonemes (/k/, /p/) or substitutions of pharyngeal fricatives by fricative phonemes (/s/, /sh/). These behaviors have been denominated compensatory articulation errors.

Approximately one third of patients with cleft palate present with compensatory errors. It has been reported that the prevalence of language disorder is higher in patients with compensatory articulation errors. Furthermore, since the nature of these errors involves the control of the vocal tract by the central nervous system, they persist even after the VPI has been corrected surgically. Compensatory articulation errors involve not only the vocal tract but higher levels of speech sound production. [6 – 10]

A phonologically based approach for treating compensatory articulation errors in patient with cleft palate does not necessarily rejects well established principles underlying traditional management of articulation disorders. In contrast, articulation must be recognized as a critical aspect of speech sound development under any theory. Consequently, phonological principles should be considered as adding new dimensions and a new perspective to an old problem, not simply as refuting established principles.

The purpose of this chapter is to describe and analyze two approaches for the speech intervention in children with cleft palate who present with compensatory articulation errors. The first approach is a phonetic or articulatory approach which addresses the articulation errors at the peripheral level. The second approach is based on phonological principles and considers that the compensatory articulation errors are linguistically based. Thus, in this latter approach, not only the motor – peripheral – structural aspects of articulation are addressed but higher levels of linguistic organization are also considered during the intervention.

PHONOLOGICALLY BASED INTERVENTION FOR CHILDREN WITH CLEFT PALATE AND COMPENSATORY ARTICULATION ERRORS

When Speech and Language Pathology intervention is based on phonological principles, some implications for the assessment and management of children with cleft palate may be assumed, including analysis of phonologic processes in addition to a more phonetic or peripheral articulatory assessment. Some scaffolding strategies have been described to be

used in the speech intervention for these children. These strategies are basically aimed to modify the system of speech sound production or articulation in each child. Using these strategies is useful for upgrading the child's communicative turns in order to increase speech and language performance. These strategies are helpful for assisting in the formulation of messages of increasing complexity, meaning specificity, accuracy and clarity of expression. Scaffolding strategies include prompts, questions, providing information, restatements, and other procedures, which provide a reliable support to the individual as he/she is actively engaged in the process of conveying a message. [11 - 13]

Several authors have described scaffolding strategies for facilitating and enhancing oral communication and/or articulate speech sounds. However, it is important to study the possible relationship between different stages of speech development or severity of articulation impairment, and the effectiveness of these strategies. Some of the most commonly used strategies include the following: Modeling, providing phonemic cues, use of minimal pairs, use of cycles, imitation, drills, requests for clarifications, phonetic changes and expansions, among others. [14 – 19]

SCALE FOR THE CLASSIFICATION OF THE SEVERITY OF COMPENSATORY ARTICULATION ERRORS

As mentioned herein, speech acquisition is gradual and it should be considered as a developmental process. By the same token, the correction of compensatory articulation errors has to go through diverse stages. A clinical scale of severity of the use of compensatory articulation errors in children with cleft palate has been previously described. [15, 18] This scale has been used for determining the stage of the process of correcting compensatory errors in which the child is at the time of the evaluation, that is, how severe are the errors in each child at a particular time. The scale mentioned herein is described as follows:

- Appropriate articulation. (First category) The child is able to produce adequate placement and manner of articulation during spontaneous speech, including non – present situations.
- Inconsistent articulation. (Second category) The child shows compensatory articulation errors inconsistently during spontaneous speech. Intelligibility is not significantly affected.
- Articulation within context. (Third category) The child self-corrects articulation when using speech within a specific context. For example during telling a story from a story book which the patient already knows well. Nonetheless he shows frequent compensatory errors during spontaneous speech, and this may affect intelligibility.
- Articulation with strategies. (Fourth category) The child can correct articulation during isolated words or selected short phrases, only when the clinician uses specific instructions on articulation. Intelligibility is affected.
- Articulation of isolated phonemes. (Fifth category) The child is able to correct articulation only in isolated phonemes through direct instruction. Intelligibility is severely affected.

- Constant CAD. (Sixth category) The child is not able to correct articulation not even in isolated phonemes and despite direct instruction. Intelligibility is severely affected.

It has been reported that some of the scaffolding strategies commonly used in speech pathology interventions for correcting compensatory articulation errors, can be more appropriate, depending on the degree of severity of compensatory errors in each child. [15, 18]

STRATEGIES

The following strategies are the most commonly used during speech pathology intervention in children with compensatory errors:

- A) Modeling: Modeling is one of the most frequently reported strategies. The speech pathologist models the speech and/or language behavior that the child is to learn. Some clinicians have reported that children respond spontaneously if the language behaviors being stressed are at the child's level. Thus, they model the behavior but do not normally request for formal elicitation. Modeling approaches the normal conditions of language learning more closely than the elicited imitation procedure. [20] Example: Child: “_all he_ (call her)”. Clinician: “Yes, call her”. This strategy has been often described as useful for language development, but it is also proposed as a strategy for children with articulation impairment, such as compensatory articulation errors. Hoffman states that the models of appropriate articulated words in context are thought to help stimulate appropriate syllabic and phonemic organization. [1] The clinician has the opportunity to model and talk about the structure of words within an overall communicative context.
- B) Modeling with stress: With this strategy, the speech pathologist models targeted sounds of speech, but includes a brief pause before the sound and also, a stress on the sounds (phonemes) the clinician wants to model. For example, during a play situation in which a cake is being cut, the child says “_ut the _ae_ (cut the cake); The clinician can respond “yes, (pause)...cut the (pause)...cake. I will (pause)...cut the (pause)...cake and give you a (pause)...piece”, stressing the targeted phonemes for the purpose of making them more easily audible and facilitating to focus attention on those specific sounds.
- C) Cloze procedure with phonemic cues: With this strategy, the clinician prompts the child's communicative turn by supplying part of the utterance and letting the child fill the rest [24]. If necessary, the clinician can provide the selected sound of the target word [12]. For example, when reading a storybook, the clinician can say: “Yes, she was hungry, and she found three bowls of ____ (soup) on the t t ____ (table)”. The idea is that sharing the responsibility of telling the story and letting fill in the blank space, the children can focus on the specific words and the targeted sounds. Also, using phonemic cues by providing the initial sound or syllable the child can direct his/her attention to the targeted sound and the distinctive features of it.

- D) **Phonetic changes:** The speech pathologist indicates that the message would be more easily interpreted with a modification in speech production [12]. For example, when the child says “the _en (the pen)” reading a storybook in which there are different objects, the clinician says: “the pen”. Remember to put your lips together and make an explosion: p p pen”. With this strategy, the information would directly contribute to refining the phonemic distinction being articulated.
- E) **Think aloud in phonemic awareness:** Originally, this is a metacognitive strategy where the speech pathologist verbalizes thoughts while reading a selection, thus modeling the process of comprehension. This strategy enables to demonstrate the patient how to select an appropriate articulation process at a specific point in a particular communicative message. The clinician verbalizes specific think-aloud about different levels of language organization including information about the sounds of speech. For example, before reading a storybook, the clinician says: “Let us think which sounds we will be focusing on. We have to consider that some sounds are short and explosive like /k/, /p/, /t/. I will write these letters for reminding us to use them while we refer to the ideas and words of the book. Besides, we have other sounds that are long and continuous: /s/ or /f/. I will write these letters in this other paper. While looking at the storybook, the clinician is focusing on the target sounds and explaining the characteristics of each phoneme and how changing the sound can change the characteristics of the word increasing intelligibility. Also, the clinician gives specific instructions about how to produce sounds correctly.

It is important to emphasize, that strategies such as modeling and modeling with stress, do not involve direct instruction on articulation placement. However, they do establish an appropriate context for focusing on specific phonemes while receiving the correct model of articulation of the targeted sounds. In contrast, all the other strategies provide information about how to manage phonemes for speech production. Based upon this statement, the strategies can be broadly divided into strategies involving direct instruction on articulation placement and strategies not involving direct instruction.

In previous reports [15, 18] children with cleft palate and compensatory articulation errors have been studied. It has been described that the level of language development and the phonological rules present in the phonological system of each child with special attention in compensatory articulation patterns should be carefully and assessed using standardized evaluation instruments. For this purpose, the children can be videotaped interacting with a trained speech pathologist during free play for 30 min. A 10-min segment is selected where a high level of verbal interaction occurred. The 10 min of interaction are transcribed verbatim to analyze the child’s phonological system and the presence of compensatory articulation. The children should undergo a speech intervention aimed to correct compensatory articulation and different approaches for the speech intervention can be compared: An approach which focuses on the phonetic or peripheral aspect of the articulation deficits and an approach based upon phonological principles, considering higher levels of linguistic organizations. It has been reported that children treated using common methods for articulatory intervention from the phonetic or peripheral stand point, [7, 21, 22] where errors in articulation are treated in a phoneme-by-phoneme basis (discrimination and production of /p/, different positions: initial,

middle and final, isolated, then in words, later in sentences) improve articulation placement regardless of persisting VPI. However, if children with compensatory articulation errors are treated through an approach based on phonological principles, the linguistic aspect of articulation is also addressed. An approach based upon phonologic principles includes the following aspects:

- a) The treatment goals were set depending on the phonological rules that are active in the child's system. [23]
- b) The intervention program was focused on the modification of groups of sounds that seemed to be treated by the child in a similar fashion. In other words, errors were attacked at the rule level, rather than at the phonetic level, for example, all plosives substituted by glottal stops.
- c) Emphasis was placed on the establishment of previously neutralized phonological contrasts. For example, the child who replaced all fricatives with stops could receive a positive response from the clinician when any fricative was used, even if place of articulation or voice errors persisted.

The goal can be conceived as establishing and maintaining new contrasts. With such goal in mind, correct production is not essential. There is much greater emphasis on the use of speech sounds for communicative purposes, rather than on the correct production of sounds as a goal in itself.

Children should be placed in small groups of similar age and speech characteristic, in order to provide opportunities for peer interaction and socialization. Only two to three children are placed in one group to maximize individual opportunities for adult modeling and other intervention prompts.

Speech Intervention usually consists of 1-h sessions, twice per week. All children should be followed until two independent examiners have agreed that compensatory articulation errors had been completely eliminated.

Table 1. Effectiveness of particular strategies and the degree of severity of the compensatory errors

Severity of Articulation Errors	More Effective Strategies
Adequate Articulation Placement	— — — —
Inconsistent Compensatory Articulation	Modeling; Modeling With Stress
Adequate Articulation Placement Within Linguistic Context	Modeling; Modeling With Stress
Adequate Articulation Only Through Direct Instruction On Articulation Placement Using Appropriate Strategies	Phonetic Changes; Cloze Procedure with Phonemic Cues; Think-Aloud in Phonemic Awareness
Adequate Articulation Placement Only on Isolated Phonemes	Phonetic Changes; Cloze Procedure with Phonemic Cues; Think-Aloud in Phonemic Awareness
Consistent Compensatory Articulation	Phonetic Changes; Cloze Procedure with Phonemic Cues

Total time of speech therapy can be considered as the time from the onset of speech therapy until the complete normalization of articulation as assessed in a phonological analysis from a free speech sample (videotape). Once articulation has been corrected, children can undergo videonasopharyngoscopy and multi-planar videofluoroscopy for pre-operative surgical planning. [24 – 26]

All the strategies promote positive changes in articulation. However, there seems to be a relationship between the effectiveness of particular strategies and the degree of severity of the compensatory errors. (See Table 1)

It should be pointed out that this relationship between effectiveness of specific strategies with severity of compensatory errors is independent of the age of the child. Moreover, the severity of the articulation errors does not correlate with age. In other words, a severe compensatory articulation disorder can occur equally in young and older children.

It has been observed that the strategies which include direct instruction on articulation placement, such as phonetic change, cloze procedure with phonemic cues, and/or think aloud in phonemic awareness, appear to be more appropriate for promoting positive changes in articulation in children with higher levels of severity of compensatory errors, such as those who can only articulate correctly when they produce isolated phonemes or used them in words or short phrases with constant support of the clinician. When these strategies were compared with those that do not include direct instruction such as modeling or modeling with stress, a significant difference was observed. However, these last two strategies showed similar effectiveness in the lowest level of severity of articulation (inconsistent). In this level, children are more aware of the use of speech sounds, and show confidence for producing these sounds during a more structured discourse. It is important to emphasize that modeling is one of the most frequent strategies described. [12, 20] Also, the two strategies which include modeling, I. e. modeling and modeling with stress, are the most common strategies used by speech pathologists in these children. Nonetheless, these strategies do not seem to be as appropriate as the ones that include direct instruction when there are severe articulation errors. It seems that the clinician should consider the characteristics as well as the degree or level of severity of the articulation impairment before deciding which strategies should be used. It should be pointed out that these strategies can be used at any time during the intervention period.

No additional procedures or studies are necessary for incorporating their use during routine speech therapy sessions. Of course, there are several other strategies which are frequently used for providing speech therapy in children with cleft palate. Also, specific methodologies and procedures have been described in the related scientific literature, reporting successful outcomes. Good results have been reported using drills with a focus on frequent and rapid repetition, frequency of therapy and frequently reinforcement at home several times a day. [7]

Speech intervention for children with cleft palate and compensatory articulation errors should be provided by addressing articulation directly but always within a linguistic context. It has been reported that besides the expected speech disorders in children with cleft palate some of these patients can show language impairment. [27] It has also been reported that low educational level of parents and limited social and economic resources are related with an increased frequency of language impairment. [28]

For the speech intervention, different activities can be implemented in order to facilitate changes in the articulatory system of each child. Some of them had a structured context such

as storybook reading/ telling where the text or illustrations provide concrete information with visual cues to refer to. Also, talking about a graphic organizer can be considered a structured and present context. In contrast, communicating during symbolic play situations in which the context or situation for playing has to be created with words, or talking about a non-present situation, are considered less structured linguistic contexts or events, since there are no visual cues supporting communication. In these instances, the individual has to create the whole context through language (decontextualized situation).

When the positive changes in articulation elicited by the use of the strategies mentioned herein, is compared in more structured and less structured contexts, there seems to be similar positive changes in both situations. Nonetheless, when the strategies that do not include direct instruction on articulation such as modeling, or modeling with stress have been assessed, there seems to be a tendency for more positive changes when the strategies are used in more structured contexts, such as storybook reading/telling. This finding can be explained since these structured situations can provide more contextual or concrete support for communication. This can be especially relevant for the higher levels of severity of compensatory errors and speech pathologists can take this into consideration when they are planning the intervention. When children with articulation errors are treated, providing visual support is valuable tool for scaffolding.

The speech pathologist must have clear goals for each patient for optimizing speech intervention. Considering which strategy could be more appropriate for each patient depending on their specific needs, such as the severity of compensatory errors can improve the results of intervention. Improving speech outcome is extremely relevant for the child's integral development and final result.

Total time of speech intervention necessary for correcting children compensatory articulation errors associated with cleft palate is reduced when the intervention is conducted based upon phonological principles and the strategies to be used during the intervention are selected according to the severity of the errors in each child. In an approach based upon phonological principles, errors are considered to be linguistically based and are attacked at the rule level, rather than at the phonetic level.

Articulation disorders in children with cleft palate have been extensively described from a phonetic or peripheral stand point. [7, 8, 9] Most authors report that these children have articulation abilities below age expectations. Only a few studies have focused on the phonologic disabilities of these children. [14, 22] It seems that some of the speech sound problems present in cleft palate children are phonologic in nature. Chapman in 1993 [3] studied the phonologic processes in children with cleft palate and found that children with cleft palate exhibit early delays in phonologic development. This finding has implications for the assessment and management of children with cleft palate, including analysis of phonologic processes in addition to phonetic analysis. It also implies that during speech intervention, remediation strategies based on phonological principles should be employed. Also, these strategies should emphasize cognitive-linguistic activities and the selection of the strategies to be used in each child should be selected according to the severity of the articulation errors in that particular child.

The reduction in the total time of speech intervention necessary for complete correction of compensatory errors when an approach based upon phonological principles is used suggests that the study of the phonologic system in these patients is of great importance.

As mentioned herein, the treatment for compensatory articulation disorder in cleft palate patients has traditionally focused on the phonetic level. However, higher organizational levels of language are usually not considered. An approach based upon phonological principles considers speech sound production as an integral component of higher levels of language organization such as pragmatic, syntactic, and semantic knowledge. Also, phonological treatments acknowledge that speech sounds function as phonemes that signify differences in word meaning, and have become more cognitive and meaning-based than traditional treatments which practice execution of gestures in meaningless syllables. [3, 4, 13, 14, 15, 18]

The final goal of a speech pathology intervention is to improve intelligibility of speech but the methods and strategies used for achieving this objective can be varied.

CONCLUSION

This chapter describes some strategies to be used in speech pathology interventions for children with cleft palate and compensatory articulation errors. An intervention including these strategies is more phonological than phonetic, that is, it considers not only the peripheral aspect of articulation but higher levels of linguistic organization. Also, considering which strategy could be more effective for each patient depending on his or her specific needs, such as the severity of the articulation errors, could be a valuable procedure for improving outcome in speech therapy intervention in these children.

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VOLUME 4

Chapter 34

A REVIEW OF MAJOR STRANDS IN DISCOURSE ANALYSIS IN LANGUAGE TEACHING

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ABSTRACT

This chapter reviews major perspectives towards discourse analysis in foreign and/or second language learning and teaching settings. Three major strands that have been examined are Critical Discourse Analysis, Interactionist Discourse Analysis and Sociocultural Discourse Analysis. Each perspective is reviewed by providing the major characteristics of the perspectives and some sample studies. One or two most current studies that are published in major journals of our field have been added to the reviews as well.

INTRODUCTION

In its most general definition, “discourse analysis” is the study of language-in-use, which includes written texts and spoken data. The word “discourse” comes from Latin “discursus”, which means “conversation, speech”. Discourse analysis aims to study language beyond sentence level, it connects linguistic behaviour to social practices or it considers language as a system of thought. The idea behind discourse is unity and coherence. In other words, “within a discourse, multiple sentences or propositions logically follow each other (VanPatten & Benati, 2010, p. 81). In this sense, Stubbs (1983, p.1) defines discourse analysis as:

- concerned with language use beyond the boundaries of a sentence/utterance,
- concerned with the interrelationships between language and society
- concerned with the interactive or dialogic properties of everyday communication

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In the explanation of this phenomenon related to language and society, what is taken into account is the interrelated issues associated with social and historical context and participants. There are different conceptualizations of discourse. VanPatten and Benati (2010) state that a discourse can be “a short interaction, an entire conversation, a written paragraph, a speech, and so on” (p. 81).

McCarthy (1991) suggests that different disciplines and their changing popularity have contributed to the appearance of “discourse analysis” throughout the time such as semiotics, psychology, anthropology, and sociology. Perhaps one of the most important fields that formed the basis for discourse analysis was linguistics. As an important part of the study of language, separate sentences were analyzed for several different reasons such as to identify the relationships between the elements in a sentence and to describe the components of sentences in terms of phonology, morphology and syntax. However, the social aspect was not taken into consideration until Austin (1962), Hymes (1964), Searle (1969), Halliday (1973), and Grice (1975) started to highlight the social and pragmatic functions of sentences and their changing meanings in accordance with context.

In this chapter, we will be examining how discourse has been used and studied in second and/or foreign language learning and/or teaching settings. In other words, we will be dealing with the concept of ‘pedagogical discourse’, as it was conceptualized in previous studies. There are different perspectives toward the study of discourse and we will be focusing on the major trends in discourse analysis in the field of second language learning. Each sub-section of this chapter will be devoted to a perspective of discourse analysis. The three major perspectives towards discourse that have been investigated are a) Critical Discourse Analysis, b) Interactionist Discourse Analysis, c) Sociocultural Discourse Analysis. Here, we have to acknowledge that there are different understandings of discourse that might be beyond the scope of this chapter (e.g., analysis of written discourse, (for a detailed review of written discourse analysis, one can refer to Ferris (2011) or different classifications of the perspectives that we were unable to discuss here. There might be even sub-classifications of these categories or different approaches within these traditions (e.g., see Wodak and Meyer (2009) for a detailed analysis of Critical Discourse Analysis and its subcategories). Because of the scope of this chapter, we are not going to examine these issues.

CRITICAL DISCOURSE ANALYSIS

In the Handbook of Discourse Analysis edited by Schiffrin, Tannen and Hamilton (2003), Van Dijk (2003) defines Critical Discourse Analysis (CDA) as “a type of discourse analytical research that primarily studies the way social power abuse, dominance, and inequality are enacted, reproduced, and resisted by text and talk in the social and political context” (p. 352). Even though its traces can be found in the critical theory of the Frankfurt School before the Second World War, in the field of second and/or foreign language, the launch of Van Dijk’s journal “Discourse and Society” in 1990 and simultaneous publication of some other books in our field mark the beginning of CDA. Van Tjik positions CDA differently among other perspectives towards discourse by stating “CDA is not so much a direction, school, or specialization next to the many other *approaches* in discourse studies. Rather, it aims to offer

a different *mode* or *perspective* of theorizing, analysis, and application throughout the whole field” (p. 352, original emphasis).

Main tenets of CDA as summarized by Fairclough and Wodak (1997, pp. 271-80) as cited in Van Dijk (2003) are as follows:

- CDA addresses social problems
- Power relations are discursive
- Discourse constitutes society and culture
- Discourse does ideological work
- Discourse is historical
- The link between text and society is mediated
- Discourse analysis is interpretative and explanatory
- Discourse is a form of social action.

Since CDA is regarded as a multi- directional mode or perspective, following these general tenets, there might be many different types of CDA, and they may be theoretically and analytically quite diverse. As a general understanding of discourse from a CDA perspective, language is regarded as *a social practice* and *context* is the heart of the analysis of language and discourse (Fairclough & Wodak, 1997). The following popular quotation by Fairclough & Wodak summarizes the general conceptualization of discourse from a CDA perspective:

Describing discourse as social practice implies a dialectical relationship between a particular discursive event and the situation(s), institution(s) and social structure(s), which frame it: The discursive event is shaped by them, but it also shapes them. That is, discourse is socially constitutive as well as socially conditioned – it constitutes situations, objects of knowledge, and the social identities of and relationships between people and groups of people. It is constitutive both in the sense that it helps to sustain and reproduce the social status quo, and in the sense that it contributes to transforming it. Since discourse is so socially consequential, it gives rise to important issues of power. Discursive practices may have major ideological effects – that is, they can help produce and reproduce unequal power relations between (for instance) social classes, women and men, and ethnic/cultural majorities and minorities through the ways in which they represent things and position people. (Fairclough and Wodak, 1997, p. 258)

To investigate how discourse has been studied from a CDA perspective, we provided one of the most recent works that has been published in a major journal of our field. In this study, Vasconcelos (2013) investigates a dialogic speech event that took place in an ESOL (English for Speakers of Other Languages) class in the southeastern United States. To critically examine the discourse, she used Fairclough’s (1992) “moment of crisis” notion where pieces of evidence regarding the communication problems and necessity of repair portrayed. Specifically, her analysis demonstrated the problematization of the concept of what it means to “be American.” By providing a step-by-step critical discourse analysis of the structure of a dialogic speech event, Vasconcelos offers a contribution that examines, and models dialogic practices associated with preparing ESOL pre-service teachers.

In Vasconcelos’s (2013) study, a series of sequential components make up the moment of crisis. To identify this moment of crisis, she uses the linguistic (verbal and nonverbal) features of the utterances as well as their place and function in the speech event. Following definitions of the different components of a moment of crisis taken from Fairclough (1992) might help us how a discursive event is analyzed critically.

Table 1. Structure of the moment of crisis

Moment of Crisis	
Trigger	Any linguistic action that precipitates a linguistic reaction
Onset	The linguistic response to the trigger; the onset characterizes the moment of crisis because it suggests misunderstanding in the speech event
Development	The linguistic chain following the onset and building up to the pre-climax
Pre-climax	A linguistic unit that leads up to the climax
Climax	A linguistic unit that indicates a decisive moment of maximum intensity because it exposes the reason for the misunderstanding
Resolution	A linguistic unit that indicates that the misunderstanding has been clarified and worked out (the resolution characterizes a moment of crisis as a dialogic speech event)
Coda	A linguistic unit that serves to round out or conclude the speech event

INTERACTIONIST DISCOURSE ANALYSIS

In the field of second and/or foreign language learning, interaction broadly refers to “conversations between learners and others, and the Interaction Hypothesis focuses on how such interactions might affect acquisition” (VanPatten & Benati, 2010, p. 99). One of the main grounds of Interaction Hypothesis is that interaction that entails negotiation of meaning and feedback facilitates second language acquisition (Gass et al., 2005). A group of scholars (Gass, 1997; Long, 1996; Pica, 1994) argue that implicit negative feedback, which can be obtained through negotiated interaction, facilitates second language acquisition. In parallel terms, Loewen & Erlam (2006) state that instances that promote and facilitate acquisition are created when learners are provided with opportunities to interact with each other to obtain comprehensible input and feedback, and to reformulate their own utterances.

The earlier traces of Interactional Hypothesis can be found in the works of Hatch (1978). However, as an intact theory, Interactional Hypothesis was first formulated and later modified by Long (1980; 1983 & 1996, respectively). Emphasizing the inadequacy of Krashen’s Input hypothesis by saying that “comprehensible input”, by itself, is not enough unless learners produce language by means of interaction, Long (1996) argues that “negotiation for meaning,

especially negotiation that triggers interactional adjustments by the NS or more competent interlocutor, facilitates acquisition because it connects input, internal learner capacities, particularly selective attention, and output in productive way” (452). Thus far, many studies reported that interaction created instances that could facilitate second language development (Ellis & He, 1999; Mackey, 1999; Varonis & Gass, 1985).

In her comprehensive review of the studies that follow an interactionist perspective, Pica (1998) claims that negotiation:

- assists comprehension
- brings salience to form-meaning relationships
- creates opportunities for learners to receive useful feedback from their interlocutors
- provides a context for the learners to use the kind of feedback that could produce modified output
- provides a context for the learners to think about syntax.

Most of the earlier studies on interaction focused on modified interaction with the ideas proposed by Long (1983) which suggest that modified interaction is the necessary mechanism for making language comprehensible. An example of how modified interaction can facilitate second language development is provided in Mackey (1999). In the excerpt X taken from Mackey (p. 558-559) the NNS does not understand the word *glasses*. The word is repeated by the native speaker (NS), the original phrase is extended and rephrased, and finally a synonym is given.

Table 2.

NS	<i>There's there's a a pair of reading glasses above the plant</i>
NNS	<i>A what?</i>
NS	<i>Glasses reading glasses to see the newspaper?</i>
NNS	<i>Glassi?</i>
NS	<i>You wear them to see with, if you can't see. Reading glasses.</i>
NNS	<i>Ahh ahh glasses glasses to read you say reading glasses.</i>
NS	<i>Yeah.</i>

To investigate how discourse has been studied from an interactionist perspective, we examined a recent study by Sato and Lyster (2012). In their quasi-experimental study, Sato and Lyster aim to investigate the effects of (a) teaching learners how to provide corrective feedback during peer interaction and (b) assessing the effects of peer interaction and corrective feedback on second language development. The findings of their study revealed that peer interaction offers opportunities for repeated production practice and might facilitate proceduralization, however corrective feedback sharpens the learners' ability to monitor both their own language production and that of their interlocutors.

SOCIOCULTURAL DISCOURSE ANALYSIS

As an alternative to mainstream interactionist perspective of second language acquisition, Vygotskian Sociocultural theory of mind has been presented in second and foreign language learning and teaching contexts. It claims to offer a promising perspective by widening the scope of language study. Lantolf (2000) argues that the implications inspired by Vygotsky “lead to a view of learning and teaching which in many respects is very different from theories currently in favor in the mainstream second language acquisition (SLA) literature” (p. 1). Most of the works on Vygotsky’s Sociocultural theory (1978; 1986) focus on discourse as well, and they claim that “more is happening in discussions than what can be surmised by the accumulated meanings of the spoken words” (Wortham 2000, p. 38). Studies that follow the Sociocultural perspective criticize those of the Interactionist perspectives by stating “interactive negotiation through individual input and output modifications does not provide sufficient conditions for acquisition and mastery of a second language” (Lee, 2004; p. 84). Quite contrary, they believe that “language learning goes beyond *what* the individual produces (e.g., input and output) and focuses on *how* the individual interacts with others through a joint activity (e.g., collaborative online exchange). (Lee, 2004; p. 84, original emphasis).

Ohta (1995) argues that research that follows Sociocultural theory in second and/or foreign language settings “examines the dynamic relationship between interaction and acquisition, exploring how language, cognition, and culture are acquired through collaborative interaction” (p. 93). In her study, while analyzing the discourse, she portrays “the learner-learner collaborative activity between two students of differing levels of proficiency to result in creative interaction where scaffolding creates a positive environment for L2 acquisition” (p. 93). The collaborative interaction which includes the contributions of learner strengths and weaknesses results in refinement of both learners’ second language use, which is explained by the concept of zone of proximal development (ZPD).

In another recent work, van Compernelle and Kingenger (2013) examine how learners interact in so-called cooperative interaction environments while they are working on a questionnaire. Following dynamic assessment principles, cooperative interaction reveals both fully formed and emerging competencies (i.e., zone of proximal development) while at the same time furthering their continued growth. This study draws on data collected during a concept-based pedagogical enrichment program in which US university students of French were learning the concepts of social distance and power hierarchies as illustrated by the second-person pronouns **tu** and **vous** ‘you’. The case study of one learner, Nikki, to show how support provided by a tutor around one questionnaire item both assessed and promoted her developing conceptual knowledge about the dynamics of interpersonal relationships and how these are indexed through language are presented in this study.

In another study, Moore (2013) examines the contextual features surrounding the use of a first language (L1) in a Japanese university during peer interaction in the extended preparation phase. Interaction data were analyzed in terms of the amount of L1 production, the distribution of L1 use within and across tasks and dyads, and the focus of learner talk. Contextual influences on L1 use were also investigated. Within dyads, learners generally used less L1 over time. This was attributed to the shifting focus of talk from procedural to content - creation activity. Some learners were consistently high or low users of L1, while

others varied. Variability was attributed to differences in second language (L2) proficiency, levels of engagement with the task and/or interlocutor, and the negotiation of task control and pedagogic roles within a dyad. Finally, it was found that the language chosen for the initial utterance of an exchange may influence that of following utterances. The results support the contention that L1 use emerges naturally in classroom discourse and that attempts to influence it should involve raising awareness of contextual conditions surrounding its emergence.

CONCLUSION

As reiterated in many other works, the importance of the examining the discourse was acknowledged by many researchers in different fields of education (Cazden, 2001; Gutierrez, 1994; Lemke, 1990; Nystrand, 1997; Walsh, 2006; Wells 1999). In this chapter, we have examined how discourse has been used and studied in second and/or foreign language learning and/or teaching settings by reviewing three current approaches towards discourse analysis: a) Critical Discourse Analysis, b) Interactionist Discourse Analysis, c) Sociocultural Discourse Analysis.

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Chapter 35

ISSUES ABOUT CONDUCTING DISCOURSE ANALYSIS RESEARCH

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ABSTRACT

The main aim of this chapter is to help novice researchers gain some insights about conducting a discourse analysis research study. We mostly refer our previous experiences and discuss some issues that might facilitate the research process. We have divided this section into three sections. The first section, before data collection, discusses some issues to be done prior to the data collection process. During data collection mainly deals with how to record the data and obtain any other necessary information. The final section focuses on topics such as data transcription, data indexing, data reduction, coding and interrater reliability. Illustrations and samples are given whenever necessary. The chapter also includes a sample of Consent Form.

INTRODUCTION

In this chapter, we will discuss some methodological issues about conducting a classroom interactional analysis study for novice researchers by mostly referring to our previous research experiences. We will also be referring to quantitative research designs and their applications in discourse analysis but most of the ideas discussed here are about a qualitative conceptualization of a discourse analysis approach.

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Most of the studies that analyze the interaction in the classroom employ a discourse analysis approach. Discourse analysis can be briefly defined as “the study of spoken and written texts” (Walsh, 2006, p.81). It mainly deals with the functions of the words and phrases in their context. However, due to its common use with different conceptualizations, it is difficult to have a clear-cut definition of Discourse Analysis. Starting from the very early studies of discourse analysis by Sinclair and Coulthard (1975), as Seedhouse (2004) asserts, majority of the studies that focused on classroom interaction “have implicitly or explicitly adopted ... a discourse analysis approach” (p. 81). Different methodological and theoretical orientations of these studies are discussed in Chapter 2. In this chapter, we will mainly deal with some practical challenges that one might encounter while conducting a study on classroom interaction.

We have divided this chapter into three sections. The first section, before data collection, will include some steps to be taken prior to data collection. These basic decisions will shape the research process therefore they have a pivotal role in the development of the research and in its later phases. In the second part, we will talk about some caveats that should be kept in mind during data collection. These important steps will facilitate the proper administration of the data analysis section. Finally, a big portion of this chapter will be devoted to after data collection phase where the mechanics of data transcription and coding will be thoroughly discussed.

BEFORE DATA COLLECTION

The heart of the research will be the research question(s), and their choice will impact the research method, data collection, analysis and coding tools. As Mackey and Gass (2005) state, “the first and perhaps one of the most difficult aspects of any research undertaking is the identification of appropriate research questions” (p. 16). Due to its significance, one should be really careful while conceptualizing and wording the research question(s). The research question should also guide the steps of your research. For many novice researchers, generating research questions is a difficult task. These questions should be interesting, current, answerable, and they should aim to address gaps in the existing literature.

Choosing the research methods (qualitative vs. quantitative) and tools (observation, videorecording, audiorecording) of data collection will be the second important step of the research process. The research questions will guide the choice of qualitative or quantitative research design which will eventually impact the choice of the participants. Most quantitative research would require random selection or distribution of the participants, on the other hand in most qualitative studies; the researchers tend to use purposeful sampling rather than random (Ellis & Barkhuizen 2005). For more information about research design, tools and sampling in discourse analysis, one can refer to Mackey and Gass (2005) and Ellis and Barkhuizen (2005).

Choosing the Research Site

Most of the research settings would require some form of permission to get access to their sites. In some situations getting the approval of the Institutional Review Boards (IRB) or Human Subjects Committee would be necessary to conduct research, in some other cases, obtaining the approval of the Managers or Supervisors of the programs would be enough. In some other settings both of these might be needed before starting the data collection. After getting all these approvals, signed consent forms of the participants will be necessary as well. These forms are usually translated into the first languages of the participants. A sample Consent Form is provided in the Appendix.

DURING DATA COLLECTION

Most of the discourse analysis research would entail some form of recording and/or observation. Walsh (2006) lists four basic choices of data recording: audiorecording, videorecording, observation and narrative. The choice of type of the recording would depend on the nature of the study and questions asked. As Walsh states, audiorecordings are the most convenient means of recording commonly used to capture interaction in classrooms. On the other hand, videorecording would provide visual images of the participants, if that type of information is necessary. They would also help the researcher identify the turns and names of the speakers which might be quite problematic sometimes due to the quality of the audiorecording devices used.

Most of the audio or videorecording sessions are complemented with field notes taken as a non-participant observer in the classroom settings. The main aim of using multiple data collection techniques is getting various perspectives of the same classroom phenomenon to increase the credibility of the study. Fieldnotes usually involve detailed impressions of the researcher's intuitions, impression, and questions as they emerge. Audio and video recording help the researcher analyze language use in greater depth later and involve outside researchers in the consideration of the data (Mackey & Gass 2005). With the help of video and audio recordings, almost all of the interaction in the classroom can be available for analysis, and this enables the researcher to focus on other dynamics in the classroom during observation while taking fieldnotes.

We should also keep in mind that, as Evertson and Green (1986) state, the purpose of the observation influences what is observed, and how observations are recorded and analyzed. The research questions and theoretical framework should shape the nature of the observations and how data are collected and analyzed.

One caveat we should keep in mind is the first day of recording. On the first recording, some participants might not reflect their ordinary performance because of the presence of the camcorder and/or researcher. Yuksel (2007) reflected the fact that the participants were not comfortable and the uneasiness could also be observed in the transcripts of Week One in his research. However, in coming weeks, the uneasiness faded slowly.

Secondary Data Sources

If necessary, secondary data can be collected as well. List of the secondary resources would include, but not limited to, background survey, exam questions, course syllabus, other course related documents, information about the setting obtained from online sources and interview data. These secondary sources can provide some additional information that would not be available through observation or interviewing. For example, the background questionnaire can include some extra information about the students, and their prior English learning experiences. Similarly, exam questions might reveal some insights regarding what is important to know, in other words, what is needed to be learned from that course. Even though most of the information obtained through secondary data sources may not be directly related to the questions in hand, they might still provide some insights to the researcher.

AFTER DATA COLLECTION

The most obvious feeling in discourse analysis studies after data collection for the novice researcher is the feeling of being lost in a vast ocean of data. Once, s/he gets over that feeling, s/he starts the post data collection phase of the study which would include data transcription, data indexing, data reduction and data coding.

Data Transcription

Data transcription is one of the most tedious stages of discourse analysis. The researcher can transcribe the data themselves or get some help during this process. During the transcription process, one can also plan to use a professional voice recognition software to help them write the conversation down. In the market, different commercial software is available. For a review of some voice recognition tools, you can refer to Honeycutt (2003). For data transcription, there are also some facilitative tools. SoundScriber is one of these media players that aids in transcription of digitized sound files and is available for free under the GNU General Public License. SoundScriber includes special features for transcription besides normal playback features such as those offered by the accessory Media Player (Play, FF, Rew, Pause). More information about SoundScriber can be reached at the following URL <http://www-personal.umich.edu/~ebreck/sscriber.html>.

Data Indexing

Data indexing involves describing the context in which the data occurred (Jacob, 1987 as cited in McCormick, 1997), in other words, where and when the activity took place in the study. As a researcher, one might need to identify the general themes of each recording session (e.g., task, activity or lesson) and give some sub-headings to the transcripts.

The Case of Crushed Petunias

Major activity: Background information		
Tragedies and Comedies (12.55-14.05) (1.1.2)		
01	T	So the English actors performed Shakespearean plays. Why? Tragedies or comedies by the way? Shakespeare comedies and Shakespeare tragedies, which ones?
02	S1	Tragedies
03	T	Tragedies, very good (++) why? Not comedies, but tragedies. Because, the aim is to--- according to the new land--- the aim must be to show the universal truth. So which one lends itself to the universal truth, tragedies or comedies?

Figure 1. An example of indexed transcript.

Data analysis is a recursive process, and the researcher needs to do data indexing and data reduction quite frequently on different occasions while dealing with the data.

Data Reduction

As Ellis and Barkhuizen (2005) recognize, data reduction is an essential and welcome process in qualitative research. Data reduction can take the form of coding, summarizing, paraphrasing, focusing, writing memos and indexing. Miles and Huberman (1984) state that data reduction can occur before, during, as well as, after data collection. Data reduction for the qualitative studies will be extremely important due to the vast amount of data. Based on our research focus and questions we can locate the sections of our data and analyse those according to our research agenda. Here, we can use the definitions and operationalization based on previous literature. After analyzing our own data, we can fine-tune or revise our classifications.

Data Coding

Coding is one of the frequently employed techniques in qualitative research. It refers to “organizing data into themes and categories so that they can be used for the purposes of ongoing analysis, interpretation and conclusion drawing” (Ellis & Barkhuizen, 2005, p. 253). In practice, coding involves attributing codes to units of data that represent the themes and categories either previously determined or that emerge from the data during analysis.

While coding and analyzing the data, deductive or inductive approaches can be used (Ellis & Barkhuizen, 2005). With top-down deductive coding, the analyst begins with a set of codes created before engagement with data begins. With bottom-up inductive coding, the codes emerge as the analyst examines the data. We can also use a combination of these techniques where we might have a tentative list of codes which take its final form after examining the data. Choice of the codes and constructs is usually motivated by the previous literature and the theoretical framework of the study. We should specifically prepare coding manuals that will guide us during coding as it will also help us during interrater reliability process. A sample coded episode is provided in Figure 2.

We should also prepare a Transcription Key that will help our readers understand the main conventions we use in our transcription. This reader-friendly manual will also help our external rater while coding our data. A sample Transcription Key is provided in Table 1.

Name of the episode – duration- number			Our Town	Name of the play
Typical Day (10.05- 24.28) (5.1.1)			Fifth week, first lesson, first episode	
01	T	Let's talk about Our Town and main theme of Our Town. Before starting, shall we talk about our own culture? {TQ-N} In your daily life, suppose you are teenagers and you are in secondary high school and you wake up. Could you please tell me your daily life in a Turkish culture? You wake up and what do you do? {TQ-A}		
02	SS	Breakfast {U-W} {REVOICING}		
03	T	Yes, you have breakfast. Who prepares breakfast? You? Your mother? {TQ-A}		
04	Si	My mother {U-P} {REVOICING}		
05	T	Wonderful, what else? {TQ-A} Your mother prepares and does she say you something while you are eating? {TQ-A}		
06	SS	Eat quickly {U-P}	Participants' names	
07	T	Eat quickly		
08	Fe	Drink {U-W}		
09	T	Drink quickly, finish quickly, what else? {TQ-A}		
10	Nu	Eat all of them {U-P}		
11	T	Eat all of them, wonderful. Don't leave anything on the plate, wonderful. Hakan, what does your mother tell you while you are eating? Nothing? {TQ-A}		
12	Ha	The same things {U-P}		
13	T	What is the same thing? {TQ-N}		
14	Ha	Finish all of them, don't leave anything. {U-S}		
15	T	Don't leave anything on the plate, finish everything.		
16	Fe	I was drinking milk and mom says don't pour it. {U-S}		
17	T	Don't pour it. Drink it, very good, wonderful. So you are pouring milk, you don't drink milk.		
18	Fe	Yes, I don't like it. {U-S}		
19	Ha	If she is (++) she is busy sometimes she wants me to collect to (++) err (++) to collect the meals (+) the plate {U-S}		
20	T	Clear the table		
21	Ha	Yes, clear the table. {U-P} {UPTAKE} {REVOICING}		
22	T	So, you clear the table.		
23	Ha	Yes {U-W}		
24	T	Very good, how do you clear the table? On the floor? {TQ-A}		
25	Ha	No {U-W}	Number of turns	
26	T	To the right place? {TQ-A}		
27	Ha	Yes {U-W}		
28	T	Right places, very good, Ok please Buket, I am looking at the slim students I am sure your parents are reminding you to eat more. (++) No? {TQ-N}		
29	Bu	My family don't {U-P}		

Figure 2. An example of color-coded episode.

Table 1. A sample transcription key

Symbol	Meaning
T	Teacher Turns
Nu, Es, Fe, Er...	Identified Student Turns
S1, S2, S3, S4	Unidentified Student Turns
[]	Extra Information
(+)	Pause (number of '+' indicates the seconds)
[	Overlapping speech
]	
[Tr.] [Fr.] [Ch.]	Utterances in Turkish, French, Chinese

Interrater Reliability

Interrater reliability is an important part of classroom discourse research. After the researcher(s) codes their data, usually external raters are asked to code some portions of the data. Researchers usually randomly select 10-20% of their data. In his study, Yuksel (2007) used a website (e.g., www.random.org) that generated random numbers. Random.org provides true random numbers through the Internet. The website claims that all numbers are tested statistically and the results are available in real-time.

After randomly selecting some portions of the data, a training manual that includes the definitions of each construct together with at least two examples can be used to help external raters. After the raters read the training manual, they can meet with the researcher and discuss some problematic issues. Usually correlation percentages are given in studies by using a score of Cronbach Alpha which is a coefficient of internal consistency.

CONCLUSION

In this chapter, we have reviewed some practical challenges about conducting a classroom interactional analysis study for novice researchers by mostly referring to our previous research experiences with the inspiration that this rough guideline will help budding researchers be more familiar with the basics of a discourse study. One should also keep in mind that some of the suggestions put forward here might not be applicable to different conceptualizations of discourse analysis approach.

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APPENDIX

LETTER OF INFORMED CONSENT

Dear student:

I am a graduate student under the direction of Dr. Deborah J. Hasson in the Department of Middle and Secondary Education of the College of Education at Florida State University. I am doing a research study about the nature of the discourse in a literature class in English Education department in your institution and I would like you to take part in this study.

The study will be done in your classroom during the regular class hours. I will place a video camera and tape recorder in the classroom and I will be observing and taking fieldnotes during this period.

There are no foreseeable risks or discomforts if you agree to participate in this study. You will participate only if you want to. Your participation will not in any way affect your evaluation at the end of the session. You have the right to withdraw from the study. The information obtained during the course of the study will remain confidential to the extent allowed by law. The results of this study may not be used anywhere other than my dissertation and your name will not be used.

By participating in this study you will be giving researchers and educators valuable information on the nature of discourse in literature classes at the college level. In addition to that, this study can serve to improve instructional methodology and the nature of teaching in literature based classrooms to make them more learner centered.

If you have any questions concerning the study, please call me at (262) 646 9824 or e-mail me at doganyuksel@yahoo.com. You may reach Prof. Dr. [redacted] or by e-mail [redacted]@[redacted].tr. If you have further questions regarding your rights as a participant in this research you can contact the Human Subjects Committee Instructional Review Board at (001 850) 644-8633 or by email (phaire@mailers.fsu.edu).

Sincerely,
Dogan Yuksel

I agree to participate in this study. I understand that I will be tape recorded and videotaped by the researcher. These tapes will be kept by the researcher in a locked filing cabinet at researcher's house. I understand that only the researcher and his professors will have access to these tapes and that they will be destroyed by 31 May 2015.

_____(signature)_____(date)



Chapter 36

CORPUS LINGUISTICS AND DISCOURSE STUDIES

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ABSTRACT

Discourse studies mainly try to go beyond sentence boundaries and analyze natural language in use. The context where written, spoken or any kind of semiotic event take place is a major concern in discourse analysis. Corpus linguistics is also related to the real language in use by making analyses of large collections of written or spoken language samples. Apart from corpus linguistics' being more of a methodology rather than a discipline per se, the main difference between the two is that while structural and lexical patterns are in the foreground in corpus linguistics, discourse analysis embraces the idea that there is more than meets the eye in the real language in use. In this chapter, possibilities of integrating corpus methodology into discourse studies are sought.

INTRODUCTION

Looking for patterns is innate in human conscious. When we ponder what we really mean by referring to something as *meaningful*, we might realize that we are actually saying '*There is a pattern there*'. In terms of language in use, this is something we naturally do without noticing most of the time. When people are discoursing, they are actually creating or revealing patterns, or they are trying to *catch* patterns created by other interlocutors. Once we catch these patterns in a conversation, we enjoy a good chat with friends; otherwise, we seem to fall short of the *meaning* we always expect.

The term discourse analysis has been in use since the beginning of the second half of the twentieth century and is directly related to the nature of written or spoken registers where contexts, purposes, interlocutors or outcomes are bound to emerge. Concepts which are beyond the language in use like conversational rules (spoken register) or the contextual functions and structures of a text (written register) are all in the domain of discourse analysis.

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On the other hand, corpus linguistics came into being through the need to understand the patterns in ecclesiastical texts that we might have been missing. These texts sure didn't lack any context or purpose, but the scholars had to go the extra mile for a deeper understanding; they were searching for patterns in these texts.

As one might guess, the discourse-corpus intersection should, to a considerable extent, relate to patterns in written or spoken registers. One of the ways which discourse analysis operates is by focusing on functions and structures of texts composed of sentences which are regarded as *beyond* or *above* what they appear. This is where text-linguistics comes into the scene. The focal point of this chapter will be the domain where discourse analysis and corpus linguistics intersect and its potentials to yield a better understanding of non-nativeness in second language texts.

DISCOURSE AND THE CONTEXT OF LANGUAGE TEACHING

Decades ago, when the importance of real language directed linguists towards new perspectives in language teaching/learning, topics such as *speech acts*, *functions and notions* and *communicative competence* were being discussed (see Austin, 1962; Searle, 1969 and Halliday, 1978). The newly embraced perspective was that people and societies used language to fulfill their needs to communicate and this language was quite different from the ones that were being taught in language classes. Ignoring the external communicative functions or purpose of the real language started to make less and less sense to theoreticians and practitioners. Communicative Language Teaching (CLT) could be counted as one of the outcomes of these discussions. With authenticity and communication at the center of the new paradigm, authentic reading and listening materials were integrated into language classrooms, and meaningless drills and made-up texts were discredited. Since then, discourse studies have played an important role in shaping the language learning/teaching process. However, this seemingly simple cause-effect relationship is neither linear nor one-dimensional.

The relationship between discourse analysis and language teaching is covered in other chapters of this volume. The topic itself is a broad one with many aspects, and one of them concerns contrastive rhetoric and how it contributes to discourse analysis in terms of EFL.

Contrastive and Intercultural Rhetoric

In classical terms, rhetoric is concerned with the art of persuasion and oratorical authority. The first sense of rhetoric was related to the speeches made by dispossessed landowners arguing their claims in front of other citizens, which dates back to the 5th century BC. In time, it gained philosophical connotations. The trinity, *ethos* (the authority of the speaker), *pathos* (the emotional state of the speaker) and *logos* (the rationality of the language used), was defined by Aristotle and has been widely used. By 16th century, rhetoric had started to appear in letter writing as an ornament, and ironically, the paradigm that regards language as a reflection of reality has made a shift towards the understanding that language actually shapes or determines reality.

On the other hand, the term Contrastive Rhetoric, which is a relatively a more recent topic of interest, simply discusses the possibility (*or the impossibility*) of inter-cultural transfer of all available linguistic and cultural means which is supposed to yield native-like second/foreign language writing. Basically, contrastive rhetoric refers to the effects of first language and culture over the second one. The idea to analyze and reveal these effects dates back to 1960's when it was realized that the ability to write grammatically acceptable writing in a target language doesn't necessarily mean producing acceptable texts in the target culture. After analyzing 600 texts written by EFL learners, Kaplan (2001) reached to the conclusion that these texts actually contained indirectness and inductive reasoning, which was actually one of the characteristics of oriental cultures and languages. In addition to this, English expository writing is thought to be linear in discourse organization whereas other languages are dubbed digressive. This promoted the idea that EFL learners were actually writing in their own language but just using the English lexicon. As Kaplan (2001) puts it,

A fallacy of some repute and some duration is the one which assumes that because a student can write an adequate essay in his native language, he can necessarily write an adequate essay in a second language. That this assumption is fallacious has become more and more apparent as English-as-a-second-language courses have proliferated at American colleges and universities in recent years. Foreign students who have mastered syntactic structures have still demonstrated inability to compose adequate themes, term papers, theses, and dissertations. Instructors have written, on foreign-student papers, such comments as: "The material is all here, but it seems somehow out of focus," or "Lacks organization," or "Lacks cohesion." And these comments are essentially accurate. The foreign-student paper is out of focus because the foreign student is employing a rhetoric and a sequence of thought which violate the expectations of the native reader (Kaplan, 2001, p. 13).

Kaplan (2001) relates this issue to the idea that the thought sequence of English, being no better or worse than any other language, is a descendent of Platonic-Aristotelian thought system shaped by Romans, Medieval European and Western thinkers later to come. This point of view actually reflects the basic idea behind the linguistic relativity theory in which language is regarded as an integral system of the human mind. That is to say, individuals perceive and render the outside world mostly through their native language. With this supposition in mind, many urban legends about language were created. Some claimed that the Eskimo language has more expressions related to snow than any other language on earth, or it was seriously discussed that some Native American languages lack the concept of time making its user see a totally different world from the users of other languages. One famous story even tells us that once an Amazonian tribe, the Pirahã, gave a devout Christian missionary, Daniel Everett, hard times because each time he talked about the Christian god, the tribesmen repeatedly asked him when or how he met this god, or they wanted him to change the subject and talk about *mundane endeavors*. It has been speculated that their native language lacks the concept of the past that the English language possesses, and this so-called deficiency hinders its speakers from talking about the things they heard happened long time ago because they are living in the present. It is no surprise that such discussions have given rise to a more empathetic standpoint in terms of language and culture.

After taking into consideration this empathetic standpoint and the accumulated research outcomes, Connor (2002) suggested the term *intercultural rhetoric* instead of contrastive rhetoric. The rationale behind this reconceptualization was mostly related to the criticism of contrastive rhetoric because of its insensitivity to cultural differences. In this respect, labeling EFL learners depending on their L1 backgrounds didn't seem right (Spack, 1997); the perception of culture as something discrete and discontinuous was criticized (Zamel, 1997); and focusing merely and too much on texts and disregarding other aspects of writing were opened to discussion (Scollon, 1997). In terms of contrastive rhetoric, learners were supposed to fulfill the expectations of the native speakers of the target language rather than freely expressing their own ideas through their own cultural backgrounds. These discussions have raised questions about the validity of such an approach and a common idea emerged concerning a need to become more aware and sensitive to the intercultural aspects of second language writing. There was a shift from analyzing what texts *mean* to understanding *how they construct meaning*. In order to guide the analysis of writing from this standpoint, Bazerman and Prior (2004) posed three questions:

- What does the text talk about?
- How do texts influence audiences?
- How do texts come into being?

Through these questions they wanted to put emphasis on the practices people are engaged while trying to create texts. It was actually an appreciation of the social contexts by which external communicative functions are realized. In the same way, the fallacy of thinking the author of a text sitting in front of a computer screen or a piece of paper on a desk is highlighted and it is claimed that some genres of writing, especially academic ones, are actually an accumulation formed by thousands of different writers in different times.

CORPUS LINGUISTICS

To begin with, corpus linguistics is mainly a method to carry out linguistic analyses but not an independent discipline per se. For instance, a language teacher realizes that EFL learners tend to use the phrase '*I think*' too frequently. Hundreds of EFL essays at hand could be analyzed to see whether it is an idiosyncrasy or not. The question at this point is: What counts as *too many*? To answer such a question, every instance of the phrase '*I think*' should be counted. However, since it would be very time consuming and meaningless without comparisons, the results would be questionable. Suppose that a processor does the counting by taking into account millions of words and makes comparisons, then the hunch stemming from an idiosyncrasy could turn into a statistically-supported pattern. Basically, this 'millions of words' is called a corpus.

Corpus could be defined as a collection of texts or speech samples stored on a computer or a digital device. These texts are collected systematically and in accordance with certain principles. The contexts provided by corpus are rich because they consist of millions of words, and they are natural because they are collected without any modifications, which

means that the language samples collected include human errors like misspellings, mispronunciations, hesitations, false-starts etc.

Corpus linguistics emerged when language was regarded as something observable. The first attempts to reveal what is *more than meets the eye* in texts came from the biblical scholars in the 13th century. They indexed the words in the Christian Bible manually, created lists to help other scholars understand it better. The technical term *concordance* also dates back to this era. The prefix *con-* means ‘together or with’, and the root word *cor* means ‘heart’ in Latin. It embraces the idea that words alone hardly mean anything, and a deeper insight of a text could be gained by evaluating the words that occur in the same context. This kind of insight becomes possible only through systematic observations of the language.

The perspective regarding language as observable has been around for a relatively long period of time, with some paradigm shifts in time especially after the distinction between *parole* and *langue* was made by Ferdinand de Saussure (Finch, 2005). The term *parole* refers to the real language in use, and *langue* is regarded as a much more complex system in which *parole* is produced. Similarly, according to Noam Chomsky, human knowledge and especially language take their roots from an unconscious system (Saussure’s *langue*) which enables utterances in any language; a model which is actually based on human competence. However, there are also supporters of a performance based model of language which takes into consideration the actual psychological and physical processes involved during language production (Saussure’s *parole*). In this discussion, it was once stated that “... information about the speaker-hearer’s competence ... is neither presented for direct observation nor extractable from data by inductive procedures of any known sort.” (Chomsky, 1965: p. 18). From this perspective, it is quite understandable for Chomsky to see corpus data as *junk* (Aarts, 2001, p. 6). As a counter discussion, corpus linguists believe that a word in or on itself does not carry any meaning, but the meaning is often made through several words in a sequence (Sinclair, 1991); and “[t]he aim is not to study idiosyncratic details of performance which are, by chance, recorded in a corpus. On the contrary, a corpus reveals what frequently recurs, sometimes hundreds or thousands of times, and cannot possibly be due to chance” (Stubbs, 2004, p. 111).

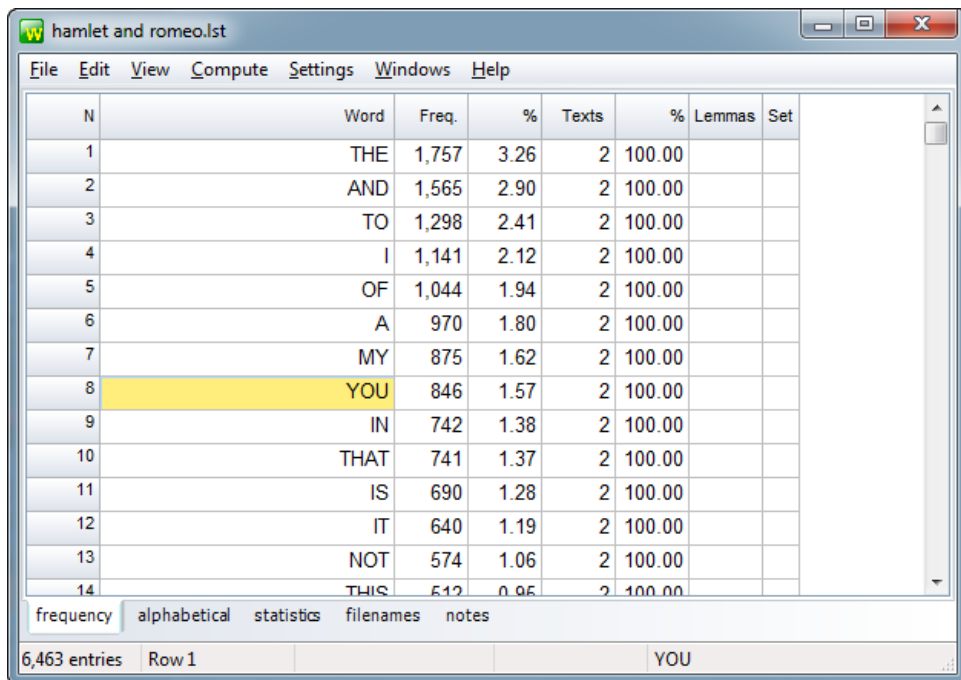
These discussions are still going on, and as digital data storage is becoming easier, digitalized and compiled language data is also becoming more and more accessible. The Brown Corpus, which was compiled in 1960’s and initially contained digitalized documents comprising of a million words, has reached a total of 100 million words and is widely in use today.

With the emergence and development of optical character recognition systems (OCR), tremendous amount of language data started to accumulate. By using OCR scanners, any type of orthography can now be digitally stored and processed. The internet, which is theoretically a kind of corpora in linguistics term, also contributed to the accumulation of language data. After the introduction of the Internet, large language samples started flowing online through emails, websites and personal blogs. This immense growth also caused problems about interpretation. Less wasn’t more, but dealing with such colossal language data was, and still is, beyond human capacity. To solve this issue, numerous free or commercial software packages and online tools have been developed. Microconcord, WordSmith Tools, Coh-metrix, AntConc and Statistica are among these tools, and they are widely known and used.

How Do These Software Work?

Generally, the software mentioned above are numerically oriented, which means that they actually depend on word counts. Digitalized language samples are used to create datasets and structured queries are carried out in these datasets. For example, we want to learn the frequencies of the words used in *Romeo and Juliet* i.e., which words are used more than the others. Digitalized text of *Romeo and Juliet* is the dataset here and the software WordSmith is making the query. After the process we get the screen in Figure 1.

In Figure 1, the words used in *Romeo and Juliet* are ordered according to their frequencies. As usual, ‘*the*’ is at the top of the list and is followed by ‘*and*’ and ‘*to*’. This is actually a very typical process in terms of word counts. The aim is to see whether the word frequencies in any given text differ significantly or not. For example, several datasets could be compared to see if they contain significantly different word types. If we want to test the hypothesis that *spoken register contains more verbs than written register*, then we will have to make word counts to see the differences among the word types that our dataset includes. The critical point here is that these software will hardly recognize the word types unless the dataset is tagged accordingly.



N	Word	Freq.	%	Texts	% Lemmas	Set
1	THE	1,757	3.26	2	100.00	
2	AND	1,565	2.90	2	100.00	
3	TO	1,298	2.41	2	100.00	
4	I	1,141	2.12	2	100.00	
5	OF	1,044	1.94	2	100.00	
6	A	970	1.80	2	100.00	
7	MY	875	1.62	2	100.00	
8	YOU	846	1.57	2	100.00	
9	IN	742	1.38	2	100.00	
10	THAT	741	1.37	2	100.00	
11	IS	690	1.28	2	100.00	
12	IT	640	1.19	2	100.00	
13	NOT	574	1.06	2	100.00	
14	THIS	512	0.95	2	100.00	

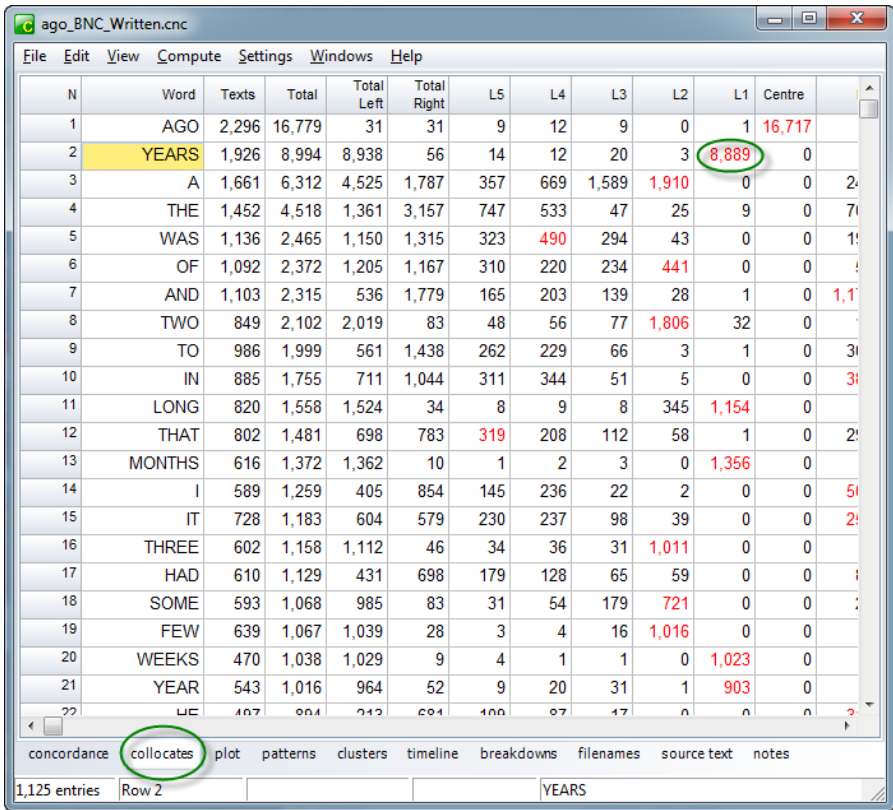
frequency alphabetical statistics filenames notes

6,463 entries Row 1 YOU

Retrieved [[11.10.2012] from http://www.lexically.net/wordsmith/step_by_step_English6/index.html.

Figure 1. Frequency wordlist for *Romeo and Juliet*.

These kinds of software are also used to look for collocations in a text. Collocation is a term used to refer to the *lexical neighborhood* of a given word. For example, we want to learn what other words occur together with the word *ago*. With the help of a processor we can get a statistical picture of the words that tend to co-occur with *ago* as in Figure 2.



N	Word	Texts	Total	Total Left	Total Right	L5	L4	L3	L2	L1	Centre
1	AGO	2,296	16,779	31	31	9	12	9	0	1	16,717
2	YEARS	1,926	8,994	8,938	56	14	12	20	3	8,889	0
3	A	1,661	6,312	4,525	1,787	357	669	1,589	1,910	0	0
4	THE	1,452	4,518	1,361	3,157	747	533	47	25	9	0
5	WAS	1,136	2,465	1,150	1,315	323	490	294	43	0	0
6	OF	1,092	2,372	1,205	1,167	310	220	234	441	0	0
7	AND	1,103	2,315	536	1,779	165	203	139	28	1	0
8	TWO	849	2,102	2,019	83	48	56	77	1,806	32	0
9	TO	986	1,999	561	1,438	262	229	66	3	1	0
10	IN	885	1,755	711	1,044	311	344	51	5	0	0
11	LONG	820	1,558	1,524	34	8	9	8	345	1,154	0
12	THAT	802	1,481	698	783	319	208	112	58	1	0
13	MONTHS	616	1,372	1,362	10	1	2	3	0	1,356	0
14	I	589	1,259	405	854	145	236	22	2	0	0
15	IT	728	1,183	604	579	230	237	98	39	0	0
16	THREE	602	1,158	1,112	46	34	36	31	1,011	0	0
17	HAD	610	1,129	431	698	179	128	65	59	0	0
18	SOME	593	1,068	985	83	31	54	179	721	0	0
19	FEW	639	1,067	1,039	28	3	4	16	1,016	0	0
20	WEEKS	470	1,038	1,029	9	4	1	1	0	1,023	0
21	YEAR	543	1,016	964	52	9	20	31	1	903	0
22	LE	407	804	212	592	100	87	17	0	0	0

Retrieved [11.10.2012] from http://www.lexically.net/wordsmith/step_by_step_English6/index.html.

Figure 2. Collocations of the word 'ago' ordered by frequency.

As is clear in Figure 2, *years* happens to be the most frequent word collocating with the target word *ago*. In the list, items such as *long*, *months* and *weeks* also stand out as the immediate neighbors of the target word. Such analysis is supposed to help EFL learners avoid the fallacy of considering lexical items as isolated units. Furthermore, this statistical standpoint is very likely to raise the perception that lexical units are not of equal importance.

One example of online inquiry systems is Coh-metrix (McNamara et al., 2005). Developed by a team of researchers from the University of Memphis, Coh-metrix is an online database which is used in text analysis at multiple levels. During calculations, it makes use of five main indices: readability scores, general word and text information, syntax, referential and semantic aspects and situation model dimensions. Each of these indices has several sub-indices. Although the database does some kind of counting, Coh-metrix cannot be regarded as a word counter in classical terms. It is an analytical digital tool which can single out each aspect of a text from the others and produces numerical values. On the website (see the screenshot in Figure 3) an input field is used to make multi-dimensional inquiries for a text.

In Figure 3, the text-input field is on the left with some other fields required to be filled. After submitting the text, an output field appears on the right where the numerical results concerning the indices mentioned before are displayed. The outcomes can be transformed into popular spreadsheet software, and a wide range of calculations become possible (see Graesser et al., 2004 for details).

Coh-Metrix2.1
Last updated: Feb. 15th, 2011

For the best effect, use IE 5.0 or above.

[Title](#) Sample

[Genre](#) Informational

[Source](#) Sample

[Job Code](#) Sample

[LSA Space](#) CollegeLevel

corpus (Granger, 2003:530-545), subjects' proficiency levels were determined using a valid and reliable placement test (Allen, 1992). The results were checked to see if their levels were homogeneous as would be expected. However, the results of the test showed that the subjects' levels varied from A2 (elementary) to C2 (advanced) level, which, in our case, demanded adjustments concerning homogeneity. Therefore, only intermediate and upper level subjects (49) were involved in the study. The assumption was that the subjects who have proficiency levels lower than intermediate level would still be dealing with

[Data Viewer](#)

24	Conditional operators	DENCONDi	4.566	Number of conditional expressions, incidence score
25	Negations	DENNEGi	0	Number of negations, incidence score
26	Logic operators	DENLOGi	22.831	Logical operator incidence score (and + if + or + cond + neg)
27	LSA sentence adjacent	LSAassa	0.284	LSA, Sentence to Sentence, adjacent, mean
28	LSA sentence all	LSAapssa	0.24	LSA, sentences, all combinations, mean
29	LSA paragraph	LSAappa	0.665	LSA, Paragraph to Paragraph, mean
30	Personal pronouns	DENPRPi	22.831	Personal pronoun incidence score
31	Noun hypernym	HYNOUNaw	4.498	Mean hypernym values of nouns
32	Verb hypernym	HYVERBaw	1.559	Mean hypernym values of verbs
33	No. of paragraphs	READNP	2	Number of Paragraphs
34	No. of sentences	READNS	10	Number of Sentences
35	No. of words	READNW	219	Number of Words
36	Sentences per paragraph	READAPL	5	Average Sentences per Paragraph
37	Words per sentence	READASL	21.9	Average Words per Sentence
38	Syllables per word	READASW	1.795	Average Syllables per Word
39	Flesch Reading Ease	READFRE	32.75	Flesch Reading Ease Score (0-100)
40	Flesch-Kincaid	READFKGL	12	Flesch-Kincaid Grade Level (0-12)
41	Modifiers per NP	SYNNP	1.25	Mean number of modifiers per noun-phrase
42	Higher level constituents	SYNHw	0.703	Mean number of higher level constituents per word
43	Words before main verb	SYNLE	9	Mean number of words before the main verb of main clause in sentences

Retrieved [5.15.2010] from www.cohmetrix.com.

Figure 3. A Screenshot from Coh-metrix.

Corpus Annotation

Annotation is defined as the practice of adding interpretative linguistic information to a corpus (Leech, 2005). Digitalized text in a database can be regarded as raw data, and it could be discussed that what we can glean out of it is quite limited. However, if one wants deeper insights as to the patterns in a given collection of texts, annotation is needed. There are different types of annotation like part-of-speech (POS), lemmatization, syntactical parsing, semantic (domain classifications) and coreference (discourse). If a researcher wants to focus on parts-of-speech, s/he has to tag the lexical items in the corpus according to their lexical categories. Similarly, if our concern relates to types and tokens, we need a dataset tagged for lemmas. The advantages of such an endeavor could be questioned. The deeper understanding about a specific language that we could reach aside, suppose that we have a corpus made up of a language we don't speak. If the corpus is annotated, to some extent, it will be easier to make deductions concerning the language at hand.

Corpus annotation helps us make interpretation from what is readily available in the texts. At this point, it is clear that human mind and its way of understanding a text is the issue (Leech, 1997). This is why, some researchers, like Sinclair (1992), advocate a minimal annotation and suggest that we should let the texts speak for themselves because interpretations are likely to vary from person to person.

The discussions as to whether these types of software and the outcomes they provide will help us gain new perspective on language are still going on. Some still claim that to better understand language in general, we should focus on the real outcomes and theorize accordingly; some others, with the Chomskyan perspective in mind, believe that the mentioned outcome is insignificant and to an extent *messy*; therefore studying the cognitive processes is the only way out to a valid ground about language in general. Apparently, taking such a dichotomous standpoint wouldn't solve many problems. Instead, by making use of tangible data, it is much more reasonable to develop a *but-it-helps* attitude. It is obvious that just by analyzing spoken or written language samples we cannot say much about the core mechanisms of a supposed language organ, but this kind of analysis could help us see patterns in languages that we are dealing with.

With the abovementioned attitude, applications from different areas of study derived from corpus linguistics; among them the most noteworthy ones are lexicography, translation, stylistics, grammar, gender studies, forensic linguistics, computational linguistics and language teaching (Tognini-Bonelli, 2001). The important point here is not what has been listed but what is actually missing: discourse analysis. Discourse analysts have been slower in making use of what corpus linguistics has to offer because of the seemingly de-contextualized nature of text fragments that corpora provide (Thornbury, 2010). In this respect, language samples without clear contexts, simply lacking the answer to the question 'Who is saying what to whom?', hardly overlap with the theoretical framework on which discourse analysis is based.

LEARNER CORPORA: A NEWER PERSPECTIVE

Learner corpus (LC) simply means the collection of written or spoken language samples produced by learners. These samples are compiled by using certain criteria. Parameters such

as learners' proficiency levels, genders, ages and nationalities are taken into account in the compiling process. The idea of systematically compiling learner corpus is often attributed to Sylviane Granger and her team's studies dating back to early 1990's. Since then, numerous studies have been carried out. Granger (2008) summarizes the results of these studies and establishes certain points that need clarification. To begin with, she separates learner corpora from native ones in terms of their sources. It means that the data is gathered from English language learners from different L1 backgrounds like Spanish, Swedish or Chinese. On the other hand, written or spoken productions of EFL learners from countries where English language has an official status are not considered valid.

The context which learner productions are taken from is another topic of concern. Collecting and compiling a native English data is mostly uncomplicated as there are no critical issues such as language proficiency level or the structural differences between the native and the target language; however, it is rare for EFL learners to naturally produce written or spoken language samples in English. This is why, tasks like reading aloud, picture descriptions or informal interviews are used to create contexts where language learners can produce such data. At this point, it is reasonable to suppose that there are more written data than spoken because, mostly for practical reasons, written data from EFL learners is comparatively easy to collect and digitalize.

Another issue in LC collection is the size which roughly refers to the total number of words it includes. Generally speaking, there is a common agreement that "small is not beautiful, it is simply a limitation" (Sinclair, 2004: p. 189). However, sometimes even a collection of only one learner's essays might be of great asset. In addition, Sinclair (2005) states that small scale corpora are particularly useful in Language for Specific Purposes (ESP) in vocabulary instruction.

Many of the studies making use of learner corpora contain a kind of contrastive rhetoric whereby native essays are compared/contrasted with the learners'. Interlanguage grammar, error analysis, textual coherence/cohesion and lexical variety are among the common topics of concern.

One of the seminal studies trying to determine common deficiencies in EFL writings was Hinkel's (2002). She analyzed 68 lexical, syntactic and rhetorical features of L2 text. The corpus that she studied on included texts written by advanced learners of English from six different languages: Arabic, Chinese, Indonesian, Japanese, Korean and Vietnamese. By doing so, she wanted to obtain a broader comparison of EFL learners coming from different L1 backgrounds in terms of written register. According to Hinkel, even after years of study in English, the learners still lack some aspects that native speakers have. The results of her study indicated that L2 writers have limited lexical and syntactic repertoires, which led EFL learners to produce simplistic texts rooted in conversational discourse in English language. The results also showed that there is a big gap between L1 and L2 texts in terms of basic academic writing. EFL learners were apparently confused about or maybe unaware of the distinctions between spoken and written discourse. That's why they transfer one register into the other, and this makes their written productions look non-native.

The Case of Adverbial Conjunctions in Learner Corpora

One aspect of the non-nativeness in L2 texts concerns adverbial conjunctions in English. According to Halliday & Hasan (1976) conjunctions is one of the four cohesive devices in a text which express certain meanings with a presupposition of the existence of other related components in the discourse. From this respect, using a conjunction is both related to mental process (coherence) and textual representations of it (cohesion). The importance doesn't lie in the conjunctions themselves but in the contextual relationships they express.

From a grammatical point of view, conjunctions are generally considered in three different categories. Coordinating conjunctions connect the ideas in two independent clauses as in (1),

- (1) We had a board meeting, but it was postponed.

Subordinating conjunctions, on the other hand, connect the ideas in a dependent clause with an independent one as in (2),

- (2) Although we were strictly told to cancel all our plans, one of the board members is abroad.

Sentence connectors express the relationship between/among two or more ideas present in more than two different independent clauses (3).

- (3) Now we have to rearrange the whole week. In addition, our schedule is already very tight next week.

For many EFL learners, studying English conjunctions isn't an easy task, nor is trying to teach them always a fruitful one. For one thing, the learners have a tendency of regarding similar conjunctions as interchangeable units. After being instructed on adversatives like *but*, *however* or *nevertheless*, with the assumption that they all mean the same thing, they use one conjunction instead of another creating contexts that might look like breaches in discourse to the trained or native eye. Take the statements (4) and (5) for example;

- (4) My father thinks that I would make a good engineer, **but** I don't.
(5) My father thinks that I would make a good engineer, **nevertheless** I don't.

The second statement above (5) seems to be lacking proper usage of the conjunction *nevertheless*. The conjunctions *but* and *nevertheless* are generally categorized under the same group as adversatives or contrastive conjunctions. EFL instructors do this in order to facilitate things for the learners during the recognition phase. However, when the need to produce in the target language arises, most EFL learners fail to deal with conjunctions. Together with their teachers, they might even get more confused with statements like the following (6).

- (6) The Sharks played with two men in the penalty box, **but nevertheless** managed to score.

Another important point about conjunctions is that the same conjunctive structure can be used to fulfill different purposes in different genres (Ford and Thompson, 1986). For example, the following statement includes the adverbial *if clause* as a polite directive (7);

(7) I'll be happy if you can just turn the music down a bit.

Teaching conditionals in a mechanical way by referring to *types* seems to be handy to EFL instructors, but isolating these structures from their contexts is very likely to have negative effects over the learning process in the long run. As one might guess, teaching conjunctions is not as straightforward as it might seem. Of course this will remain just an insight unless supported by tangible data. However, the traces of this problem can actually be found in learner corpora.

In one corpus-based study, Schleppegrell (1996) analyzed texts written by EFL learners with an aim to reveal strategies for conjunctions that are typical of spoken English, and the focus of the study was the conjunction *because*. The participants were mainly Asian immigrants who had lived in the US for different lengths of time with advanced level of English proficiency. The results of the analyses revealed that the EFL learners in the study used the conjunction *because* more frequently than native speakers of English. An interesting parallelism between uses of *because* clauses in spoken English and ESL writing was also present. It was considered as an indication of how EFL learners transfer spoken register into their written productions.

Similarly, Altenberg & Tapper (1998) wanted to determine how advanced Swedish EFL learners use connectives in their argumentative essays. The learner data was from the International Corpus of Learner English (ICLE) and the reference corpus was gathered from essays written by American university students whose native language is English. Their focus was on three types of connectives: adverbial conjuncts (e.g., *therefore*, *in particular*); certain style and content disjuncts (e.g., *actually*, *indeed*); and some lexical discourse markers (e.g., *result*, *compare*). The results revealed that there is a significant plethora of adverbial connectives in the essays written by the learner group. In addition, this group also used slightly more types of connectives than the native speakers of English.

In another study, which also used corpus-informed methodology, Tankó (2004) analyzed learners' written productions consisting of 93 argumentative essays which were written in an examination by EFL learners. The learners were native speakers of Hungarian and their ages varied between 20 and 24. Their essays, which were composed of approximately 500 words, were compared with a reference native corpus, and the results of the analysis showed a comparative overuse of adverbial connectors. Supposedly, the rationale behind this overuse was that the Hungarian language does not require the overt marking of relations between linguistic units of the text. This structural difference is thought to be the reason why the EFL instructors in this specific context put more emphasis on the explicit teaching of adverbial connectors.

The abovementioned corpus-based analyses represent just one facet of how corpus methodology could be integrated into discourse analysis and they might provide us with a better understanding of EFL learners' written productions by taking into account the quantity of English adverbial conjunctions. It's reasonable to suppose that the overuse of these conjunctions create an unsteady discourse in EFL learners' writings. Besides, this overuse

doesn't seem to be of any help in terms of cohesion which is actually the major concern with conjunctions.

The way we teach adverbial conjunctions could be questioned here. As was mentioned before, context-free categorization of conjunctions might be creating false pictures in the learners' minds. It is interesting that in our native languages we don't normally use conjunctions with similar meanings interchangeably. Depending on the discourse context, conjunctions seem to fall into their places naturally. On the other hand, EFL learners seem to be enjoying English conjunctions more than needed, which is supposedly not the case in their native languages.

As has been discussed so far, corpus linguistics is a methodology that could prove useful for discourse analysts. Emerged from a need to better understand scholastic texts hundreds of years ago, corpus linguistics has gained systematicity over the years with the advancement of digital technology and related domains such as the Internet. Data is still building up and one of the corpora, COCA (Corpus of Contemporary American English), has recently reached up to 450 million words in total. Discussions as to the usefulness of collecting authentic language samples are also going on. The idea that human language cannot be evaluated solely depending on the oral or written outputs takes its roots from the Chomskyan perspective that regards human language as a complicated system and claims that it should be analyzed as such. Nevertheless, the domain of language learning/teaching seems to have benefited from what corpus linguistics has to offer as a methodology through the results of analyses gleaned from learner corpora. Many aspects of learner language have been revealed thanks to these corpora. One potential aspect, language learner discourse, still awaits to be discovered through qualitative and quantitative methodology and the latter is likely to be realized by corpus analysis.

In terms of corpus linguistics, discourse analysis and English language teaching, the next thing to do is actually quite clear. What we need is more discourse-friendly collections of learner corpora with more discourse annotations to help us better understand the core aspects of both written and spoken EFL discourse.

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Chapter 37

ACTION RESEARCH: THE EFFECTS OF TEACHER ORAL DISCOURSE ON EFL WRITING

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ABSTRACT

Research on the effects of feedback on EFL writing is well documented (Ferris, 1997, Ferris 1999), although Hyland and Hyland (2006:186) state: ‘Given how few studies have been carried out, little is known about the relationship between teacher and student discourse and teacher feedback in conferences and student revision’. The qualitative action research study outlined in this chapter addresses this imbalance. It concerns teacher-conferencing on academic essays written in a higher education context in Turkey. Based on a model of interrelated practices for action research suggested by Burns (2005), it investigates the relationship between discourse features of the conference and alterations made in follow-up drafts. Working with a constructivist approach to data, the study outlines how three Turkish teachers analysed transcripts of themselves conferencing in order to identify desirable features. Using such features, a second AR team repeated this procedure to investigate the relationship between the conference and amendments to follow-up drafts. The chapter outlines practical action research and conferencing. It looks in particular at the effect of two specific features of conferencing discourse: teacher-eliciting and the use of the L1.

INTRODUCTION

Burns (2010) illustrates the popularity of action research (AR) projects worldwide, and the value to ELT practitioners of AR outcomes. Studies into the effects of feedback on

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EFL/ESL writing are well documented, in particular in articles by Ferris (1997 & 1998) and at book length by Hyland and Hyland (2006). In contrast, while few accounts of AR projects looking at the effects of feedback on writing seem to appear in the research literature, even fewer involving AR or any other research method appear to have looked at the effects on EFL/ESL writing of perhaps the most interactive method of feedback, that of teacher-student oral conferencing (from hereon, 'conferencing'). This chapter analyses the impact on revision drafts of two specific features of conferencing discourse: teacher-eliciting and the use of the L1.

LITERATURE REVIEW: THE ROLE OF FEEDBACK IN APPROACHES TO TEACHING WRITING

However time-consuming feedback provision may be for teachers, it is generally agreed to be helpful towards developing writing skills. Learners tend to view feedback as desirable, even crucial, and value it as a means of assistance. Investigations into its effectiveness have flourished in recent years, although conclusions surrounding feedback types and their degrees of effectiveness in terms of improvements in writing on the whole tend to vary or conflict. Although a variety of means are available for the provision of feedback, such as error-correction, and teacher-written commentary, commenting on conferencing, Hyland and Hyland (2006: 186) conclude that: 'Given how few studies have been carried out, little is known about the relationship between teacher and student discourse and teacher feedback in conferences and student revision.'

Goldstein and Conrad (1990) noted how revisions appeared to occur when they had been negotiated, while not going into the specifics of which features assisted such revisions. Patthey Chavez and Ferris (1997) found that all student revisions were conference related, while two other findings were that the same treatment in the conference does not generate the same response from all students, and that what they term the 'divergent backgrounds' students bring to it may affect the conference. (1997: 51). More recently, working with advanced writers, in terms of specific features of conferencing that impact successfully on revised drafts, Weissberg (2006) found that the observable discourse mechanism of dialogic 'scaffolding' (verbal support for the learner), in particular through questioning and phrase repetition provided salient means of assistance, although he concludes (2006: 262) "the impact of scaffolding on students' later written drafts remains to be determined".

This chapter addresses the point made by Hyland and Hyland above by examining and outlining the role of two specific discourse features: teacher-eliciting and the use of the mutual L1. For each of these features, three extracts from data generated during the research are analysed. In terms of its findings concerning the use of these features, I believe the points made will prove valuable to teachers of writing engaging in conferencing. The full-length version of this study from which this chapter draws its data is a doctoral thesis for The University of Warwick (UK), while an expanded version of this chapter also appears in ELTED 14.1 (2011).

An Action Research Framework

While variations of Lewin's original concept of AR (1946) have been proposed, the best known is the model by Kemmis and McTaggart (1988) which consists of a cycle of plan - act - observe - reflect, although Burns (2005) points out how critics such as Elliott (1991) believe Kemmis and McTaggart (1988) over-represent action research 'as a series of fixed and predictable steps.' Believing it to offer more flexibility within an AR approach, this study implemented Burns' (2005) contrasting and more detailed framework of what she terms 'interrelated experiences.' This appears below in Figure 1.

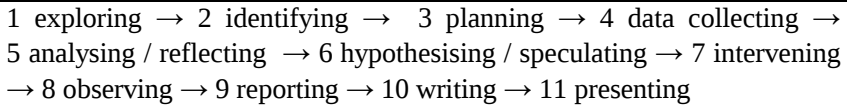


Figure 1. Burns' (2005) suggested framework for AR.

METHODOLOGY

The qualitative study outlined in this chapter was carried out in Turkey in a university preparatory year writing context. Following an investigative phase, it involved two AR teams which, apart from myself, consisted of Turkish teachers of writing. The study investigated the benefits to student writers of oral feedback on their work. It encompassed one complete AR cycle with two main stages, in this chapter referred to as Stages One and Two, each involving differing groups of teacher and student participants. With regard to teachers, Stage One was carried out by two males (N and Ö) and one female teacher (S), all experienced in teaching writing. Stage Two consisted of myself, plus S, the female teacher from Stage One, with the addition of another female (E). As each teacher at each stage provided oral feedback on the essays of two students from their classes, the study thus involved twelve preparatory class students at lower- and intermediate-levels. Written permission was obtained from each student for their names to appear in the eventual public document.

Although this chapter refers to a 'framework', it would perhaps be more accurate to view its phases as a series of overlapping interrelated experiences. Two points which this chapter identifies are that some phases of the framework tend to work in tandem, and that phase eight (below) appeared to be a dominant feature of the study.

This chapter focuses on what happens in the writing conference and its relationship with the revision process. It identifies issues involved when two conferencing features – those of eliciting and the use of the mutual L1 – were used. Such issues concern alterations made by students on follow-up essay drafts. In doing so the chapter responds to Hyland and Hyland (2006: 96), writing on the effects of oral response, and reflects their conclusion that, concerning the features used and moves implemented, '...the type of verbal interaction taking place in the conference has an influence on the type of subsequent revision.'

Exploring and Identifying

In order to locate patterns regarding feedback on writing at the institution concerned, I initially made audio-recordings of group and follow-up individual interviews with six teachers of writing. My analysis of the transcripts revealed how error-correction and teacher written comments predominated. Also revealed, however, was that, although used by only two of the six teachers, conferencing with students about their essays, either on an ad hoc basis during the lesson or in an office following it, appeared to be both mutually appreciated and highly valued. Feeling that the comment by Hyland and Hyland (2006) concerning the paucity of work carried out on conferencing and follow-up revisions to be a research space, I investigated the relationship between features of the discourse of conferencing and their effects on follow-up drafts. As Extracts 1 to 6 in this chapter indicate, such a relationship is often complex.

Planning and Data Collection

The AR team for Stage One conferences consisted of three Turkish teachers of writing: S, Ö and N. I was at this point working from the outside, helping set up and make audio-recordings of each teacher conferencing with the two students they had each selected from their writing classes. I then wrote up and, following member checks for their accuracy, analyzed the resulting six transcripts.

Stage One Data: Analyzing and Reflecting

Phases one and two of Burns (2005) framework formed the initial analysis, the first of what eventually became several mini-cycles of analysis (MCA). During this analysis teacher-eliciting was identified as a dominant discourse feature in terms of relationships between initial and follow-up drafts. The three examples below illustrate varying degrees of success using this feature. Evidence of the complexity involved in its use appears in Extract 1 where, after commenting as follows in her conference with student G on a sentence which in fact was entirely correct,

Extract 1

S:	so instead of however you can say.. in..
G:	in addition
S:	you can say in addition or.. or maybe while you are doing all these
G:	meanwhile
S:	there's an alternative to meanwhile..in the...
G:	in the..
S:	in the meantime.. both of them are possible..

(Student) G altered '*However, you should also subscribe to an internet server company..*' to '*Subsequently, you ought to subscribe to an internet company*'. It is interesting to note here how G, having himself suggested the alternative 'meanwhile', opts in his follow-up draft for something completely different. Also, instead of rewriting a later sentence containing the

incorrectly used 'meanwhile', he completely omitted the sentence in the second draft. Such points reflect the difficulty in establishing relationships between conference discourse and follow-up revisions.

Hypothesising and Speculating

Implementing phases three and four of Burns (2005) indicated the interrelated nature of phases of the framework adopted for this study, as further analysis took place when planning how to proceed based on the outcome of MCA One above, the initial analysis. This further analysis was analysis as reflection rather than as action. At the same time it formed part one of a second MCA.

Intervening

The intervention at this point, phase seven in Burns (2005) framework, functioned as a continuation of MCA Two. Due to unforeseen circumstances a new AR team had to be formed. While adaptation of Burns (2005) involved further planning and data collection within the intervention phase, it was noticeable how MCA Two also built upon the previous MCA. The second MCA led to our adapting the framework of Burns (2005). To an extent, MCA Two and Three may belong to the same mini-cycle, and indicate how the borders of such MCAs may not be clearly defined.

N and Ö withdrew from the study without notice, both intending to complete their own doctoral studies. Their leaving meant only S remained from the original AR team. At this juncture, and prior to Stage Two conferencing, I decided to alter my role from outside facilitator to that of inside joint data-generator, feeling this was more in the spirit of AR. Following my invitation, E agreed to participate in the study. The study thus proceeded once more with a team of three, this time with two female Turkish colleagues and myself.

Stage Two Conferencing

According to Burns (2005), following the hypothesising / speculating stage, there should then follow a stage involving intervening and, later, observing. In order to intervene and observe what happened when points arising from both analysis and hypothesising concerning future conferencing were implemented, however, it was firstly necessary to re-implement a previous stage, that of planning / data collection. In fact it would appear that in the case of this study the intervening and observing would then, prior to the reporting, writing and presenting stages, be followed by further analysing / reflecting. The remainder of the study involved observing and analysing. This adaptation of the order reflects Burns (2005: 59) who suggests that processes experienced by action researchers are 'best viewed as necessarily adaptive to the educational situations and circumstances of the participants.'

Observing and Analysing: MCA Three

Observing while analysing continued, with each member firstly carrying out an independent analysis of each set of conferencing data prior to collaborating to agree on matters. The outcome of this was MCA Three, which concerned the team working individually on the second set of conferencing data. This analysis reflects a complete contrast to MCA One, during which I assisted three teachers with analysing only the particular conference they were involved in.

The outcome of MCA Three was a realisation that we needed further refinements to our analysis, i.e., action that involved adapting our tools for analysis. It also became clear during this MCA that identifying and tabulating points raised and relationships to follow-up drafts was not an easy process. In this regard it is important to point out how, in accordance with qualitative studies and working within the constructivist paradigm, the relationship may not be observed as merely cause-effect. At this point I believed it might assist with the study if, as a team, we firstly identified points indicated by the teacher for discussion in the conference, then located and agreed on sections of the transcript within which each point was covered. With the benefit of hindsight, doing so much earlier in the study would have been extremely helpful. This means of analysis is indicated in Table 1.

Table 1. Refinements in analytical tools

Draft One Point	Turn(s)	Feature(s)	Draft two	Category
6: ‘increase the quantity of penalties’	50-68	L1	‘introduce stricter penalties’	One

Observing and Analysing: MCA Four

Moving onto the third set of Stage Two conference data resulted in MCA Four, where once again we noted a relationship between teacher-eliciting and alterations on follow-up drafts. A second example of the use of this feature appears in Extract 2:

Extract 2

S:	what does this sign mean (indicating her symbol denoting a missing word) what is this
F:	to ermthere needs to be a verb
S:	a verb there.that’s right..you need something there..what do you think
F:	to erm
S:	increase

Compared to the complex issues involved in identifying relationships between a conference and alterations in the previous example in Extract 1, data in Extract 2 show perhaps more clearly how F has altered successfully, although in this case S ultimately provided the correct verb. F altered ‘*Another solution would be to advertise campaigns..*’ to ‘*Another solution would be to increase the number of advertising campaigns..*’

Conferences Four to Six: MCA Five

With the tools for our analysis complete by this point, we were able to analyse the remaining Stage Two conference in the same manner, resulting in a single and final MCA. Analysis of the fourth of our six sets of Stage Two conferencing data was the first part of an MCA that also covered conferences five and six. A more successful example of the use of eliciting and successful alterations in the follow-up draft appears in Extract 3.

Extract 3

F:	it doesn't er seem good
S:	how can you make it better
F:	I can add..I can add er this essay er discusses these precautions er

Based on the exchange above, in which F and S discuss how to make the essay more reader-friendly, F added to his introductory paragraph '*In this essay I will try to discuss these precautions.*'

Data in Extracts 1 to 3 therefore indicate varying levels of relationships between conference discourse and outcomes on follow-up drafts. The first extract indicates how problematic it may be to detect the relationship between teacher-eliciting and follow-up draft revisions, while the second indicates how eliciting alone may be insufficient. In the third extract however, teacher-eliciting proved entirely successful.

Stage Two Data Analysis: L1 Use during Eliciting

The second discourse feature this chapter looks at is the use during conferencing of Turkish, the mutual L1. Extracts 4 - 6 below analyse the effect of using this feature during conferencing. Early on in the analysis of data generated in Stage Two the AR team noted how limitations concerning the language levels of students with whom to conduct conferences may be at least partially overcome by using the L1. Data from conferences four to six in Stage Two, however, indicate how eliciting in the L1 also appeared to be valuable, although still not without problems. Extract 4 indicates how S did this to correctly elicit 'strict'. (The Turkish appears in bold, while the correct translation follows).

Extract 4

S:	more natural English?..instead of increase the quantitymaybe you can say daha sıkı cezalar.. daha sert cezalar (stricter penalties.. harsher penalties)
F:	yes strict..strict
S:	yes..that's right

Based on this exchange, F altered '*First of all government should increase the quantity of penalties*' to a perhaps more stylistically superior '*First of all, the government should introduce stricter penalties.*'

In Extract 5 (a continuation of Extract 2 above) S uses Turkish to successfully elicit three possible options, of which, as his alterations in Extract 2 indicate, F used ‘number’ in: *Another solution would be to increase the number of advertising campaigns..’*

Extract 5

S:	what of advertising campaigns can you increase ...nesini artırabiliriz (what can we increase)
F:	say amount mik...
S:	sayısı (amount) that’s correct ..sayısı artır (increase the amount)
F:	quantity..amount..number
S:	that’s right ok so if you say//

In Extract 6 below student F is once again able to build on S’s use of the L1.

Extract 6

F:	mmm
S:	I know what you mean .zorlaştırmak (increase the difficulty)
F:	zorlaştırmak yes
S:	but how do we say it.. what is this structure
F:	yes..I learned it.. you said it in class
S:	oh..did I.. ok
F:	make it er to make ..to make more difficult
S:	but..not more difficult..make difficult is ok but you need another word here..you need a pronoun

Based on the exchange here, and reflecting how the use of the L1 was partially successful, student F altered ‘*Another precaution which government can take is making difficult having driving licence*’ to ‘*Another precaution which the government can take is making more difficult for people to have a driving licence.*’

A close look at Extracts 4 to 6 and revisions made by the student on his follow-up draft indicate how the use of teacher-eliciting in each, when backed up with the use of the L1, led to successful outcomes on each occasion.

CONCLUSION AND DISCUSSION

This chapter, involving the location and analysis of desirable conferencing features in terms of beneficial effects on follow-up drafts, firstly reflects how AR cycles are not linear, but involve overlapping and interrelated phases. Analysis of the six extracts above reveal how, although problems may still occur in follow-up drafts, teacher-eliciting, especially with the aid of the L1 would appear to be of valuable use when conferencing.

The findings support and extend the work of Goldstein and Conrad (1990) mentioned earlier in this chapter. Along with the degree of negotiation Goldstein and Conrad (1990) refer to in terms of the requirements to improve the follow-up draft, analysis of Extracts 1 to 6 in this chapter also identify two specific discourse features with which to do so. In relation to

the point made by Patthey-Chavez and Ferris (1997), that the backgrounds of students may affect the degree to which successful revisions may be made, this may be true, but is beyond the scope of this chapter and would of course require further investigation. The findings outlined in this chapter certainly support and extend those of Weissberg (2006) on the use of scaffolding, especially with regard to two specific features of verbal support for the student writer involved in constructing essays.

Struggling at times to do so, writing up the original study on which this chapter was based was aided by points provided in Burns (2010: 161-162) in the hope that, as she suggests there, '...your audience gets good insights into the AR process, your findings and the insights you gained for improving professional practices.' I would recommend this list of points to others seeking to publish accounts of AR projects.

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Chapter 38

DISCOURSE OF READERS' BLOGS IN COLLEGE-LEVEL ESL CLASSROOMS

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ABSTRACT

Blogs have become a useful component in many language classrooms, with the benefits of contributing to incidental learning among students and promoting collaboration among all members of the classroom community and across the increasingly globalizing world. The usefulness of blogs in writing courses has been explored, but their role in increasing reading proficiency and critical thinking in reading courses is less clearly understood. This chapter aims to analyze the discourse of blog postings for evidence of critical reading and active engagement in college-level ESL reading classrooms. Fifty-six students in five advanced-level Reading classes in an English for Academic Purposes (EAP) program at a mid-size, public undergraduate college in the United States are described in this chapter. Over the course of each semester, the students posted blog entries about three novels on a weekly basis. In addition, the students completed a pre- and post-course survey measuring their attitudes towards reading and blogging. Discourse analysis of the blog postings revealed that students' critical thinking on the readings deepened over the course of each semester. The results suggest that blogging may be usefully implemented to improve students' extensive reading outside of class and active engagement with the text and other readers. Further, the feedback provided by the students in both the survey and in the blog postings themselves points to ways in which blogs can create a strong sense of community in ESL reading courses and similar environments.

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INTRODUCTION

The recognition that online literacy is an increasingly important part of language learners' communicative competency is not new. Leu (2001) discussed the need to prepare students for global interaction by developing literacy on the internet. Leu also predicted that the pace of change in online communication would be rapid and challenging to manage, which has certainly come to pass in the past decade or more. In this chapter, we explore the implementation of blogs in college-level ESL reading classes. Based on our discourse analysis of students' blogs, we investigate the impact of blogs on students' motivation and perception of reading, on their interaction with their peers in an English for Academic Purposes (EAP) Reading course, and on their ability to read critically.

BACKGROUND: LITERATURE REVIEW

To address the new forms of texts other than traditional print, the New London Group (1996) introduced the concept of multi-literacy. *Multi-literacy* is a term adopted "to focus on the realities of increasing local diversity and global connectedness" (New London Group, 1996, p. 64). If this need was present in 1996, today it is even more urgent for educators to be aware of the reality of multiple channels of communication over which learners must gain control. In addressing the increasing demand for multi-literacy, a number of studies over the past decade have supported the importance of extensive reading in positively affecting students' reading approaches and perspectives or attitudes (e.g., Siah, 2008; Siah & Kwok, 2010; Pino-Silva, 2006). Building on Leu's (2001, 2002) work on literacy as a process that converges with online technologies, Hsu and Wang (2011) define *new literacies* as "literacy-related skills needed in an interactive multimedia environment, such as retrieving and evaluating information, comprehending information, and producing and publishing information through online technologies" (p. 69). In the current interconnected world, the reading curriculum needs to incorporate elements of authentic online communication. Online reading has been employed by many reading teachers and its benefit has been recognized. Pino-Silva (2006) found extensive internet reading can lead to incidental vocabulary acquisition and encourages teacher-student collaboration.

In addition to acquiring information online, new literacy also entails the ability to produce information online. Blogs, a fast means of publishing information online, have been increasingly implemented in education, especially in language teaching. The comment function of blogs allows the blog writer and blog readers to interact and exchange opinions in a timely manner, which creates a sense of community. It is this special kind of bonding among a community of learners that Dickey (2004) has in mind when discussing the benefits of blogs in distance learning for preventing the sense of isolation that such learners often experience. The increased prominence of community that is facilitated by learners' use of interactive blogs is further reinforced by Kelley and Clausen-Grace (2009). This phenomenon has a role to play not only in distance education contexts, we argue, but in any type of learning community in which deeper discussions of reading material are sought. As Sawmiller (2010) notes, blogs encourage writing, promote critical thinking skills, and offer differentiated instruction to fit students' learning styles in the science classroom.

Blogs in the Second Language Classroom: Background, Benefits, and Motivation

In the second language classroom, blogs are mostly used in the context of writing classes to promote peer collaboration. Abidin, et al. (2011) argue that blogging creates a Zone of Proximal Development (ZPD) where students feel comfortable to share not only ideas but also differences and help each other to achieve their learning goals. The EFL students in Malaysia in their study participated actively in the blog group discussion, which helped them complete the writing task and learn new vocabulary. Similarly, Wu and Wu (2011) employed a teacher's blogs and students' group blogs. Students wrote collaborative reflection on articles posted on their teacher's blog. Survey results showed that learners perceived the use of blogs positively for their language learning in that it improved their reading and writing skills. The students in the Taiwanese university they studied reported that they read faster and more fluently and could write more using different sentence structures and new vocabulary.

As language learners post their thoughts and reactions to the materials they are reading with their peers in blogs and then respond to the blog postings of their classmates, it has been argued that the enhancement of learners' ability to discuss, describe, and reflect upon what they have read is a key benefit of blogging that emerges. Renandya, et al. (1999) discuss retelling as a natural, enjoyable part of the reading process. In the process of retelling, learners frequently engage in elaboration and explanation, enhancing their own understanding of the material they have read in the process. Similarly, Al-Fadda and Al-Yahya (2010) found that blogging encouraged EFL students to complete pre-reading assignments, interact with peers, and engage in post-reading reflections.

A further benefit of blogs that has been proposed is that they facilitate sustained independent reading by learners. Increasing the amount and time of independent reading that language learners regularly engage in has been linked to benefits for younger students if implemented and supported appropriately, as pointed out in studies such as those examining the efficacy of sustained silent reading (SSR) and similar approaches (e.g., Reutzel, et al., 2008). Likewise, Izquierdo and Reyes (2009) note that blogs increased student autonomy in learning and reduced student dependence on teacher. The instructor used class blogs to post readings and students could comment on the readings. Students reported reading more outside the classrooms, using new vocabulary in the blogs and improving their writing skills.

Building on the generally favorable findings just discussed, Hsu and Wang's (2011) research established the positive impact of blogs in developmental reading classes, particularly with regard to student retention and persistence in studies. Blogging activities in the developmental reading classes they examined enhanced students' interaction and fostered a strong sense of community and rapport, both of which contributed to a higher retention rate compared to the non-blogging group. In addition, less vocal students who may have been hesitant to share in face-to-face classroom discussions felt more freedom to express their ideas in blogs, giving the reading blogs an equalizing quality (p. 80). On the other hand, their findings also indicated that there may be limitations in the usefulness of blogs if faculty members view them as merely add-ons to traditional reading activities, rather than as powerful tools for generating competency in new literacy skills.

A final benefit of blogs in the context of reading classrooms, one that is supported by our findings, presented later, concerns the potential for interactive blogs, particularly when used purposefully in a learning environment, to promote and elicit critical reading among the

bloggers and readers. So-called "fake readers" (Kelley & Clausen-Grace, 2007, 2009) exist not only among child language learners, but more insidiously among adult second language readers. Medelman (2007) notes the importance of teaching students to read critically in an age in which young people, including young college-aged adults, are increasingly engaged in passive activities (most online gaming, television and movies available on demand most anywhere, and many aspects of social media). Newman, et al. (1995) investigated group discussions of lectures and readings in face-to-face and online (asynchronous) formats. They found that more novel ideas emerged in face-to-face communication, but that increased justification and linking among ideas occurred in the online communication mode. Whether these findings may extend to blogging in reading courses is an important question that we examine in this chapter.

Besides understanding the possible benefits of blogs for reading, it is important to gain a better understanding of the factors that motivate students to use and benefit from blogs. Huang, et al. (2008) examined learners' motives for reading blogs, finding that these included affective exchange, information search, entertainment, and getting on the bandwagon. They also identified influences on reading blogs, including opinion acceptance, interaction intentions, and word-of-mouth (WOM) intentions. These motives and influences, if properly understood, can be applied in the context of reading classes to increase students' motivation.

The Sociocultural Context of Online Classroom Discourse

McCarthy (1991) provides educational and language researchers with a foundational understanding of discourse analysis (DA) as a means of understanding the functions—particularly the social functions—of talk in the language classroom. In many important ways, McCarthy and some other researchers working in the area of DA from the 1960s through the 1990s prefigure the present-day discourse analysis of blogs in their calls for understanding discourse as comprising not merely speech, but written interaction as well. Of critical importance in any effort at discourse analysis is the careful consideration of the context within which the interaction occurs. Therefore, the use of a DA approach to understanding blog-based communication requires a clear understanding of the classrooms, technology, and participants involved.

In a helpful example of such an approach, Lomicka and Lord (2012) analyzed the micro-blogging of language learners. Discourse analysis of the learners' tweets revealed the existence of "social presence" in the tweets of French learners, which is signified by affective and interactive indicators. Learners were found to talk about their lives, reply to each other and ask questions, thus building a strong community among classmates, which creates an optimal sociocultural context for language learning. However, how language learning in blogs is evaluated remains unanswered. Critical thinking skill is one essential skill in reading. Newman, et al. (1995) developed a content analysis method to measure critical thinking in face-to-face and computer supported group learning. Their analysis module included ten paired indicators such as relevance, importance, novelty, ambiguity, bringing outside information, interpretation, and so forth. A number of these indicators proved to be useful analytical tools in the present research effort.

Taking into account the generally positive results that have obtained in studies focusing on the use of blogs in the second language classroom, this chapter investigates the use of

blogs in a college-level English for Academic Purposes (EAP) reading class. We adopt a discourse analytic (DA) approach in order to understand the experiences of students who are using blogs to communicate about and fully engage with a series of novels read outside of class. Information on the students' perceptions of blogging and reading are given context as the voices of the students themselves emerge in their own words, in their own blogs.

METHODOLOGY

Fifty-six students in five different reading classes in an English for Academic Purposes (EAP) program at a public, 4-year college participated in the research effort described in this chapter. The 56 participants represent 14 different first language backgrounds: Arabic, Bahasa Indonesia, Bengali, Chinese (Mandarin), Farsi, French, Igbo, Korean, Pashto, Punjabi, Russian, Spanish, Vietnamese, and Yoruba. The EAP Program is part of the student support course structure of the college and offers classes in Composition, Listening and Speaking, and Reading. The average class size in the Reading classes is 15, ensuring a relatively low teacher-student ratio in these courses, and the areas of focus include enhancing reading skills and fluency, recognizing patterns of organization in academic texts, understanding and responding to college-level reading materials, and building academic vocabulary. In addition to readings in the course textbook, students are assigned to read three novels outside the class over the semester as part of the effort to build reading fluency. In the first semester, three books were chosen for outside reading: *The Unwanted: A Memoir of Childhood*, by Kien Nguyen; *The Kite Runner*, by Khaled Hosseini; and *The Help*, by Kathryn Stockett. In the second semester, two additional outside reading books were selected: *Tuesdays with Morrie*, by Mitch Albom; and *A Lesson Before Dying*, by Ernest Gaines. The third semester of the course featured two additional outside reading novels: *Things Fall Apart*, by Chinua Achebe; and *Water for Elephants*, by Sara Gruen.

At the beginning of the semester, students were assigned into blog groups of three or four (depending on the total number of the students in the class). Each group had a group leader who was regarded as relatively "tech savvy" and could help the group members with some technical issues in posting the blogs. In their groups, students determined the pace of reading by deciding the number of pages or chapters they would read each week, as long as the books were completed before the designated final blog for each book was due.

Each week, the students completed an individual blog entry in which they reflected on the segment of the outside reading novel they had read since the previous week's individual blog. In addition, on alternate days, students posted comments on their blog group members' blogs. This interactivity was made possible by grouping students into small teams known in the class as Literature Circles. Each week during the semester, students composed and posted blog entries addressed primarily to their Literature Circle teammates, who were reading the same novel at the same time as the blogger. Students were given much freedom on the content of the blogs. They could write about their own reaction to the part of the book they had read, analyze one of more major characters, discuss one or more selected paragraphs, draw connections to their own experience, relate the book to current events, and so forth. Students were encouraged not to simply summarize the chapters read.

Desire2Learn (D2L) is the learning management system (LMS) in which the students' blogs were hosted. The D2L blog feature allows students to post individual blogs and to create a "Blog Watch": a list of classmates' (and the instructor's) blog postings that they wish to read whenever those blogs are updated. Importantly, the blogs are semi-public within the college community, meaning that others who are enrolled at the college can view the blogs of any other student at the college, provided that they have valid credentials to log on to the D2L platform and have been given access to the blog feature by their instructor(s). One advantage of this system is that students are able to see the broad range of blogs being produced by other students across the college, which may give them a more complete picture of what can be done with educational blogs. More importantly, for the immediate context, perhaps, the students are made aware that they are writing for a potentially broader audience than just their instructor or classmates.

Comment Feature of the Blogs and Literature Circles

In addition to having the opportunity to express their views on the reading assignments, students were expected to reply to their Literature Circle teammates' blog postings. This comment feature of the blogs provided for authentic interactivity among the students within their Literature Circles. The online blogging and commenting mirrored, expanded, and supported the in-class discussions of the Literature Circle groups. Interestingly, the level of sharing provided for in the blogs expanded on that available to the students when sharing only in class. The availability of the learners' blogs to everyone with access to the college's D2L site meant that there was an element of audience and intrinsic motivation not present in traditional classroom-only communication. As Liao, et al. (2011) found, a blogger's motivation is strongly affected by her expectations of the outcomes of blogging. It is with that understanding that we next turn our attention to the blogs of our own EAP students.

Overview of Student Blogs

Before undertaking an in-depth analysis of the discourse of the students' blogs, we begin with an overview of the evidence for critical reading and critical thinking more generally in the blogs. In order to do this, we make use of Newman, et al.'s (1995) adaption of Henri's (1991) indicators of critical thinking reflected in online communication (pp. 6-8). A sample of 10 EAP students was selected, and an initial blog posting, posted near the beginning of the semester and a final blog posting, posted near the end of the semester, by each student were examined by both researchers independently to identify evidence of each of Newman, et al.'s indicators. Each researcher's findings were discussed so that consensus was reached on the final tabulation. Table 1 presents examples of the major categories of evidence and the numbers of tokens identified in the 10 initial and 10 final blog postings.

Table 1. Evidence of critical reading in EAP student blogs

Category	Example	Total Tokens in Sample	
		beginning of semester	end of semester
[R] Relevance	In both books the principals characters (Morrie and Jefferson) are resigned to died, but they teach us that we can died with dignity.[R] (Maria, L1 Spanish, female)	9	7
[O] Bringing outside knowledge/experience to bear on problem	In my last job I had witness some employees been exploited by bosses because they do not know how to express well in English.[O] (Carlos, L1 Spanish, male)	4	4
[A] Ambiguities: clarified or confused	It seems the circus was his gratest [sic] passion. That was why when people were doubting him that he gave water for the Elephant, he was outraged. [A] (Matthew, L1 Yoruba, male)	1	1
[I] Importance, Important ideas or interpretation	The only reason for Aibeleen to work under racism by Elizabeth and her colleagues was the enormous love for Mae Mobley [L] (Carlos, L1 Spanish, male)	2	5
[C] Critical assessment	He emphasized Amir's guilty at the beginning of the book to attract reader. Then he contrived Hassan's death that was really touched reader's feelings...Overall the author is effective with his unique style of writing. [C] (Min, L1 Mandarin, female)	3	7
[P] Practical utility (grounding)	I think this book teaches something to everybody; that one should never give up in life because your efforts will pay off in the end.[P] (Vedika, L1 Punjabi, female)	2	4
[W] Width of understanding (complete picture)	The two books has a same theme about Inequality. [W] (Min, L1 Mandarin, female)	0	2

Note: Learners are identified by pseudonyms, with first language (L1) and gender indicated.

Table 2. Frequency of indicators of critical reading in initial and final blogs

Blog set	Relevance [R]	Outside [O]	Ambiguities [A]	Importance [I]	Critical [C]	Practical [P]	Width [W]
Initial	90%	40%	10%	20%	30%	20%	0
Final	70%	40%	10%	50%	70%	40%	20%

The results of the analysis of the sample of ten initial and ten final student blogs across three semesters with respect to the frequency of occurrence of the indicators of critical reading are presented in Table 2.

Although most of the categories outlined by Newman, et al. (1995) showed little change over time (from early in the semester to the end of the term) in the samples of students' blogs, two of the categories do bear discussion. First, the Importance (I) category showed a change from two instances in the initial samples to 5 in the students' final blogs. As this category indicates the introduction of important ideas or interpretation, and increase here may be evidence of students' feeling increasingly aware of the connections between what they have been reading and specific significant concepts from their own lives or the wider world. An

increase in the I category may additionally indicate that students are more confident in sharing their increasingly complex views with their classmates.

The second category that showed a meaningful increase from the students' initial to final blogs was the Critical assessment (C) category. For most students, blogs at the beginning of the semester are dominated by the summary of the story with one or two sentences showing personal feeling about the plot or character. As the semester moved on, students started to offer more comprehensive assessment of the characters, events in the novels, and even evaluation of author's writing style. For example, in Rene's (L1 French, male) initial blog on *the Kite Runner*, he expresses his interest in the story, but does not explain why he enjoyed the book: "First read the book and enjoy the movie ". In his final blog on *The Help*, he offers a more comprehensive assessment of the characters: "It is like reading a story in the story. Miss Aibeleen is very smart...Miss Skitter is a very kind character...Miss Celia also she is my favorite character not because she keeps secret from her husband but she appreciate [sic] what Miny is doing." The inclusion of more critical assessment, as exemplified in Rene's final blog post, is evidence of students' active engagement with the reading and critical thinking.

As mentioned, the students' blogs did not show significant change over time for most of the categories suggested by Newman, et al. (1995). It may well be that the lack of complexity involved in some tasks resulted in a lack of significant differences in the blog samples identified. For example, 9 out of 10 initial student blogs sampled included an example of relevance (R). Provision of relevant comments was evident in 7 out of 10 final blogs in the sample as well. Where more complex critical reading was required, such as in the introduction of important ideas (I) and critical assessment (C), important differences were, in fact, observed.

DISCOURSE ANALYSIS OF THE BLOGS

Characteristics of the Discourse of Learners' Blogs

Blog entries by nature are normally relatively brief statements of the views and ideas of the writer. In the case of the student blogs that we have analyzed for this chapter, most followed the pattern of introducing the reading or portion of reading discussed in the blog, followed by the student's ideas and interpretation. As we analyzed the discourse of the learners' blogs collected over three semesters of the EAP Reading courses described earlier, a number of key concepts emerged in the discourse itself. Evidence of increasingly complex ideas, increased expression of subjective thought, and expanded intersubjectivity was identified over the course of the semester in the learners' blogs. A number of salient examples of each type of evidence drawn from the student participants' blogs are presented below. EAP students here are identified by pseudonyms, with first language (L1) and gender noted.

Increased Complexity of Ideas

Most of the EAP students described in this chapter demonstrated a gradual increase in complexity of ideas from their initial blog postings early in the semester to the final blogs

posted near the end of each term. In the example below, Maria moves from superficial notes about a character's actions to a deeper discussion of abstract concepts such as racism and death by the time of her final blog:

This kind of books like *Tuesday with Morrie*, are very interesting because is came from the personal real life characters, and the author promise to keep in touch with him, but he never did it. (Maria, L1 Spanish, female, near the beginning of the semester).

The difference in not only development, but also depth of ideas can be seen clearly in Maria's end-of-semester blog posting:

The comprehension and loving are the keys. *Tuesdays with Morrie* is the teaching how this two concepts combined can change people personal life. In *A Lesson Before Dying*, also comprehension and loving is the key to eradicated racism. In addition, death came in different ways: *Tuesdays with Morrie* by fatal disease and *A Lesson Before Dying* by fatal injustice. In both books the principals characters (Morrie and Jefferson) are resigned to died, but they teach us that we can died with dignity. (Maria, near the end of the semester)

Although Maria's focus in both blog postings is on characters, the move from characters' outward actions to their inner lives and motives, as well as to the lessons we can draw from their experiences, is significant.

An additional example of increasing complexity in reflection and critical thinking is observed when students begin to compare and contrast the novels. In the two blog posts below, one drawn from the first part of the semester and one from the end of the semester, Tam, a relatively recent immigrant from Vietnam, demonstrates growth as he progresses from a simple translation strategy for reading to an approach based on comparison of the motivation of the plots of all three novels read in the course of the semester:

I found it is hard to read this book. I had to translate more than half of the words. That is why I just got to chapter two. However, this story is very interesting. Therefore, I will try my best to read it. I hope by the time I get to the end of this book, my reading skill and vocab will be improved. (Tam, L1 Vietnamese, male, beginning of semester)

Tam's blog posting from later in the semester illustrates the increasing complexity of his analysis of the outside reading material:

Although the book used many Ibo words, I found that this book is easier to understand than the first two books. The difference between this book and the other two is that this book does not have a central story. Unlike, the advanture [sic] of Jacob in "Water For Elephants" or the confict [sic] inside Amir in "The Kite Runner", "Things Fall Apart" just tells the story of Okonkwo, who is a great man, but he got in trouble because of this temper. There is only two events that I think are two main problems of the story are the exlie of Okonkwo and the conflict between the slanmen [sic] and the people who build the church. (Tam, end of semester).

It is noteworthy that whereas Tam's initial blog contains general observations about the interest level of the book and his difficulty in reading, his final blog delves deeper into the content of multiple stories, analyzing the common crises across different plots.

Evidence of increasing critical reading from another student's blogs includes the following posts from Min's blog:

Khaled Hosseini, the author of *The Kite Runner*, used a fascinating style to tell the story. He emphasized Amir's guilty at the beginning of the book to attract reader. Then he contrived Hassan's death that was really touched reader's feelings. The authors composed many details about Amir's interior monologue. By the end of the book, the author repeated the theme, there is a way to be good again, to enhance the redemption. Overall the author is effective with his unique style of writing. (Min, L1 Mandarin, female, blog near mid-semester)

Her increased use of a critical analytic approach can be seen in one of Min's later blog postings, this one excerpted from a post near the end of the semester:

Kien Nguyen, the author of *The Unwanted*, used a fascinating style of writing in this book. The book was easy to read because the author used simple words and succinct sentences. He narrated the book by first person speech, and described his feeling directly and frequently. (Min, near end of the semester).

Increased Expression of Subjectivity

Following Roebuck (2000), Newell (1996), and others, we also identified evidence of students' increased ability and comfort with expressing their subjective views. The presence of subjectivity in students' writing about what they have read has been posited as evidence of the meaningful interaction of readers with text, and may indicate, "engagement with the story, with the personal statements offering emotional reactions to form and content and associative statements offering links between the students' understanding of the story and their experiential knowledge" (Newell, 1996, p. 165). Newell adds that subjective statements, such as those exemplified by the EAP readers below, are much more likely to occur in reader-based (as opposed to teacher-centered) contexts where learners are free to offer interpretive statements. We explore increasing subjectivity in several excerpts from Min's blog posts:

This is an impressive story about a pair of best friends in Afghanistan. Two boys grew up together as close friends, but one was a master, another one was a servant. The little servant obeyed everything that the master asked him to do, and protected his master as well as he could. Notwithstanding they were playing in same yard, but they were treated in total different ways. (Min, initial blog post)

By the mid-semester point, Min has moved from commenting on simple observations about the actions of characters in the book to comments about her own experience with the reading:

I am on Chapter 24 now. I would finish the book if I did not have a math exam. I am impressed by the ten chapters from 14-24. I never knew people could get punishment if they told truth in the U.S. Sounds the civilizations changed a lot. (Min, blog post near mid-semester)

In Min's final blog, there is clear evidence that Min is confident enough to offer deeper interpretation of the themes present in two of the novels:

The Unwanted vs. The Kite Runner

The two books has a same theme about Inequality. Hassan faced inequality during his whole life. Readers are easy to feel pitiful about the boy. Similarly, Kien in *The Unwanted* was treated as inequity because he was a half breeze [sic]. Another theme is redemption. In *The Kite Runner*, Amir made a mistake and tried to hide the secret. He hurt Hassan and had darkness in his heart, and he regretted his behavior for a long time. By the end of the book, Aim adopted his nephew as his son did remedy his fault. In *The Kite Runner*, Kien's grandparent refused to leave Vietnam when the war started. They wasted too much time. Finally, they knew if they had considered more about young generations; if they agreed to leave, Kien and his siblings would have escaped the war. They were too selfish when they made the decision. (Min, final blog post).

The progression of ideas in Min's blogs from the beginning to the end of the semester points to her increasing level of comfort with self-expression.

Increased Intersubjectivity

The notion of *intersubjectivity* when applied to the language learning classroom context refers to students working together to establish norms of engagement and socially constructed, agreed upon meanings (see, e.g., Hellerman, 2008, among others). In the culturally and linguistically rich EAP classrooms discussed and analyzed in the present chapter, the need for students to co-construct a culture of learning in which individuals feel encouraged to share their subjective views is of vital importance. Because of the layer of cultural and linguistic background differences within which the students are negotiating meaning and establishing common ground with their peers, some of the assumptions that students in a more culturally and linguistically homogenous classroom environment might hold are simply invalid in the EAP Reading classroom.

Evidence of intersubjectivity is found in students' comments on one another's blogs. Students have the opportunity in the blog responses to ask for clarification on their Literature Circle teammates' ideas. As mentioned earlier, the students are instructed to target their blog responses to the ideas and assertions in their classmates' blog postings, rather than simply giving their own opinions. This emphasis on others' ideas promotes intersubjectivity and fosters the sense of community that is so important for allowing students to open themselves up to their Literature Circle teammates and others.

A useful example of intersubjectivity is Rene's commentary on Hua's blog (L1 Chinese, female) about her reaction to how Aibileen felt when she lost her son in the book *The Help*. He not only offers supportive praise to his classmate regarding her earlier blog post, but also expands upon some of the specific ideas she expressed.

I like the way you broke down the part that you red and find very touching. Indeed the part you [sic] just explain at the beginning [sic] the way Abileen [sic] felt when she lost her child. It was very sad. As I am reading this different novel, I learn that many narrators want to captivate the reader mind and heart through the character in the book and Kathryn Stockett did a fabulous job with the help. (Rene, end of the semester).

The intersubjectivity established among peers in each Literature Circle group provides a foundation for the collaborative construction of more advanced analysis of texts as students think critically together. For example, clarification of ambiguity [A] can be observed in some of the blog comments students provided to their peers. An example is Matthew's commentary on Nina's final blog:

All his expectations just ruined. He, actually, had not been worried [sic] about being forgotten by his kids. He was waiting for this day, thoughts that he going to see circus bring out all his memories. This is a sad final of this story. (Nina, L1 Russian, female, end of semester blog)

Matthew's comment demonstrates clearly that he is responding to Nina's post, rather than simply offering his own thoughts on the novel's plot:

Jacob was really [sic] devastated when his children did not show up to take him to circus. It seems the circus was his greatest [sic] passion. That was why when people were doubting him that he gave water for the Elephant, he was outraged. (Matthew, L1 Yoruba, male, in reply to Nina, end of semester)

He offers here both confirmation of Nina's claim about Jacob's disappointment in *Water for Elephants* and an explanation for the sad ending mentioned in her final blog. An additional example indicates how students also use their blogs to communicate practical advice to their peers. In the following example, Vedika offers her classmates advice on applying the moral principles from one of the novels: "I think this book teaches something to everybody; that one should never give up in life because your efforts will pay off in the end." This example of intersubjectivity is echoed in a number of the other students' blogs and blog responses.

Students' Perceptions: The Reading Blogs Survey

As mentioned earlier in our description of our research as presented in this chapter, a survey was distributed to the students to determine the participants' characteristics and their views on reading blogs at the beginning and end of the semester. The initial items in the survey included basic demographic information: Gender, Age, First language, Years living in the U.S. Next, several questions targeting the students' views on reading and blogs were asked:

How would you describe your confidence as a reader in English?

When you read in English, which one of these describes your reading rate (reading speed)?

How would you describe your experience this semester with blogging?

Several more open-ended completion statements were given next for the participants to complete:

I think reading in English is _____.

Reading in English for me is _____.

Being able to read well in English is _____.

When someone asks me a question about something I have read in English,
_____.

Please indicate your favorite book in English:

Places for open comments on reading and blogging were also provided:

Please use this space to give other comments about your view of reading in English.

Please give other comments about your view of Blogging in the Reading class.

The results of the learner survey confirmed that a majority of the EAP readers increased in confidence, felt better equipped to engage with and analyze reading materials, and recognized the benefits of reading and of blogging in support of reading. First, about 48% of survey respondents indicated they had increased in confidence as readers as a result of reading and blogging about reading throughout the semester. About 36% of the students also felt that reading in English had become easier for them by the end of the semester.

The value of blogs in the context of a reading class was also supported in the survey results. Based on the responses, over half (about 52%) of the students had either rarely or never used blogs before the Reading course. This fact may not be surprising when one considers that many of the students in the EAP courses do not have a strong background in technology use, either because of lack of access to technology or because of inadequate familiarity with some academically-oriented technological applications.

By the end of the course, about 56% of the students indicated they were either somewhat likely or actively planning to blog on their own. Fully 64% of students reported that blogging helped them understand their classmates' viewpoints more fully. In a related finding, about 52% felt that blogging about what they were reading increased their sense of audience, a concept covered in the Reading courses.

In addition to the definite survey responses, the more open-ended learner answers revealed the ways in which blogs created a strong sense of community and rapport among the students. The earlier discourse analysis results of the blogs were confirmed in the students' self-reports. For example, Min comments in her survey at the end of the semester, "Blogging is a [sic] interesting part of reading class. I like to compose blog and read others' feedbacks. Also, I enjoy my reading group sharing ideas about books on blogs." Min's appreciation for the intersubjectivity promoted by reading blogs is evident in a number of other students' open-ended survey responses as well.

The potential for blogging to enhance students' self-expression is likely due in part to the less intimidating nature of blogs in comparison with more formal book reports. This perspective is reflected in some of the students' own survey responses. For example, Dona (L1 Spanish, female) indicated in response to the survey item: *Please give other comments about your view of Blogging in the Reading class*, "I felt that that informal blogs where more enjoyable then the formal blog. Because there was not stress about doing the blogging [sic] right or wrong."

There is also evidence in the survey responses in support of the idea that blogging can contribute to students' attention to details in the material that they are reading. For example, Vedika (L1Punjabi, female) noted in her comments on the student survey about blogging that, "it is really helpful in making your writting [sic] better, paying more attention to every detal [sic] in the book." If blogging is perceived by students as a tool for increasing one's awareness of and attention to the details of reading, this reality would add to elements such as audience and intra-group communication to recommend blogging as a valuable tool to promote critical reading among second-language learners.

DISCUSSION AND CONCLUSION

The discourse analysis of students' blogs confirms our assumption that blogs on reading can enhance students' critical reading. Newman, et al.'s (1995) adapted indicators were used to describe student's critical thinking and reading skills. The comparison between the discourse of students' initial blogs at the beginning of the semester and that of their final blogs near the end of the semester shows that students offer more important ideas for interpretation and critical assessments in their final blogs. Their final blogs also demonstrate increased complexity and expression of subjectivity and intersubjectivity. These findings support Newman, et al.'s (1995) claim that online discussion elicits more important statements and linking ideas than face-to-face communication.

The usefulness of Newman, et al.'s (1995) adapted indicators can be evaluated by examining the ability of the framework to facilitate the identification of important phenomena in the activity of students in the learning process. As Newman and colleagues point out, "In our transcripts, we found few obvious A+-, P+- or W+- statements" (p. 74). They go on to identify a possible cause for the finding and offer advice on the circumstances under which some indicators may be eliminated from the framework: "This may be an effect of the nature of the student task: general discussion rather than the more specific problem-solving activities. But if others find the same in other learning situations, these indicators should be dropped" (p. 74). Essentially, the authors offer future researchers guidance on using such an evaluative framework. Namely, the categories included and concepts outlined need to be applied on a case-specific basis so as to ensure the maximum utility of the system. This approach is consistent with the evaluation of Newman's method offered by Landis, et al. (2007).

Besides the positive effects of the use of blogs on students' critical reading, we also observed a strong sense of learning community being built through blogging. This is consistent with Hsu and Wang's (2011) finding that blogging activity enhances classroom rapport. From the comments students leave on each other's blogs, we observe students giving

praise, showing agreement/disagreement, or offering practical advice to their classmates. This sense of community is also confirmed by their survey responses at the end of the semester.

In terms of the development of *multi-literacy*, as defined by the New London Group (1996), blogs promote overall literacy and reading confidence in the context of new media, including socially-oriented media modes such as blogs. It is important at this point in the discussion to recall that multi-literacy today refers not only to the ability of learners to negotiate texts presented in a variety of online and offline modes, but also to their capacity to adapt to the proliferation of cultural shifts and interactions that online discourse fosters. Reading in a multi-literacy sense, then, is a complex process through which students are equipped to read texts, either on paper or via a screen (e.g., tablet, e-reader, laptop, or others), and to discuss and share their views regarding what they read using socially-oriented media. Blogging appears to support both major aspects of this process.

The findings of our own research suggest that blogs can be effectively employed in the reading class to enhance students' critical reading. In our application of blogging, we did not give students specific guidelines to avoid restrictions on students' thoughts, but some students had a vague idea on what to write in their blogs. Many of them summarized more than analyzed the novels in their blogs, which could explain the relatively small number of critical thinking tokens in our analysis, although these tokens did increase over time. In future implementation, we could set more specific guidelines or ask comprehension questions at the beginning of the semester to encourage students to write more on their thoughts. Once they get used to sharing opinions on blogs, we can reduce the guidelines to allow students to express their views more freely.

The level of sharing should also be considered when employing blogs in class. We used the blog function within the course management system (Desire to Learn, D2L). Although the blogs are visible to all registered students on campus, few readers outside the students' Literature Circle groups would be likely to read the blogs, which may affect students' motivation. To increase students' motivation and to build a stronger sense of audience, some popular blog sites (e.g., Blogger, Blogspot, <http://blogger.com>, © 2012 Google; or Wordpress, <http://wordpress.org>, © 1991 Free Software Foundation, Inc.) could likewise be employed in the classes.

A concluding word concerning the future of discourse analytic (DA) research in the context of research into multi-literacy and modern ESL reading instruction draws the strands of our chapter together. It is hoped that among the lessons that will be drawn from our discourse analysis of reading blogs is the potential of targeted blogging to expand and sustain independent reading and critical thinking through the promotion of online discourse about reading among peers and to the broader community. We recommend that future research and application in this area focus on the areas in which the social and pedagogical functions of blogs intersect, facilitating both meaningful interaction concerning reading and the development of critical reading capacity in language learners.

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Chapter 39

A DISCOURSE ANALYSIS ON THE MITIGATION LANGUAGE USED IN THE SUPERVISION OF COLLEAGUES

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ABSTRACT

Research into the general nature of the supervisory process in language education has recently gained popularity. This chapter includes the examination of the analysis of the mitigation discourse found in the supervisory interaction between two graduate students. To illustrate the submerging patterns of mitigation I will examine the nature of the supervisory feedback sessions I provided for two classmates, one of whom teaching ESL and the other Chinese at undergraduate level, focusing on the effects of such devices observed in the transcripts of the two post-observation conferences held with the latter. Findings of this study discussed in this chapter recommend that mitigation be used as a strong pedagogical tool for the professional development of practicing and student teachers.

INTRODUCTION

This chapter looks into the discourse patterns found in the process of supervising two colleagues/classmates in terms of the mitigation language used by the supervisor. It is based on the language used during the pre and post observation conferences held as part of a graduate course about teacher supervision with the two teachers whose classroom instruction was observed by the author. Brad Watson and Shuei Li are the two pseudonyms used in reference to the two classroom teachers and colleagues I met during a term I spent at a graduate program in The USA as an exchange student. I observed Brad once and Shuei Li

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twice. The whole process promised to be an interesting experience right from the start in that one of them was a NSET teaching an ESL class at the IEP program of a State University in The USA and the other one a native speaker of Chinese teaching her L1 to an undergraduate class at the same institution. I had concerns at the beginning about having to observe a class taught in a language I did not speak. But I thought it would also allow me to focus more on the other aspects of teaching and teacher behavior.

With both teachers I held pre-observation and post-observation sessions. My American supervisee was quite comfortable with being recorded during all stages of the supervision process while the other one expressed concern about being audio-taped during the pre and post observation sessions saying that it was not compulsory for the former and not really necessary for the latter. I sympathized with her concern about the taping of the pre-observation session but I had to record at least one of the two post observation sessions as required for the study reviewed in this chapter. I believe this difference can be attributed to cultural and personal differences, but it did not prevent me from having a try. After all, as Bailey (2006) points out, these days language teacher supervisors are called on to work with teachers from a wide variety of linguistic and cultural backgrounds and it would likely have positive and negative consequences.

I tried to execute my observation in such a way that it would prove to be what Gebhard (1999) defines a “nonjudgmental description of classroom events that can be analyzed and given interpretation.” I avoided judgmental behavior particularly during the feedback sessions, which had been one of my weaknesses during similar sessions with the pre-service teachers I supervised at my home teaching situation.

Observing two different classmates enabled me to compare the differences between the possible amounts of distance between the two parties of the supervision process as well as examine a variety of reactions to my attitude as a supervisor. For instance, Brad was very much in control of his situation and displayed a significant amount of power during all the stages of the process by offering me copies of the recordings he had been planning to perform as well as asking me to execute the supervisory feedback session within the next 24 hours after my classroom observation. On the other hand, his use of initiative, which I interpreted as one of his possible strengths as a teacher during the pre-observation session, was not balanced with his ability to involve all the students in the classroom activities during my observation. He seemed to keep his distance from his students as an authority figure rather than maintain the profile of a powerful and interactive teacher. He depended more on his time management skills and kept the class moving smoothly but he did not seem to have much of a rapport with the class. They did all he said but they did not seem to enjoy themselves. In my opinion, language learning is supposed to be communicative, informative and fun. But there was no element of fun in the air, the reason for which might have been his health situation with his throat. If I had the chance of observing him one more time, I would certainly supervise him about this aspect of his performance as I believe he has all that it takes to be a fun teacher thanks to his jolly nature.

Unlike Brad, Shuei Li was a little tense during the two pre-observation conferences and made it clear by expressing her dissatisfaction with my attempt at recording those sessions. But other than that, she was very cooperative and confident especially during her classroom instruction and the post-observation sessions. However, she seemed to keep the pre-observation sessions as short as possible. Looking back now, I relate this to her excitement before the event.

As a non-native speaker, she gave me the chance of witnessing a different approach to teaching as compared to NSETs. Medgyes (2001) refers to this difference arguing that non-native-speaking teachers adopt a more guided approach, are more cautious, are more empathetic to the students, attend to real needs, and have realistic expectations.(as cited in Bailey, 2006, p.308). That indeed was the case because I had observed that Brad as NSET did adopt what Medgyes defines a more flexible, more innovative... and frequently more casual approach (ibid.). I have decided to focus on Shuei Li's performance in this paper since I believe she, as a NNSET, offers better prospects having similarities to my target audience at my home teaching situation, where I supervise NNES pre-service teachers. Her performance displayed a lot of positive changes since our feedback session. First of all, she increased her use of L2 in her instruction and made sure the students understood what she was saying by asking them comprehension check questions in L1 and L2. Another improvement with her teaching behavior was her continuous attempt to involve every student in the classroom tasks. She achieved this goal by walking toward them and mildly insisting on eliciting a response from them. Fortunately, the students were very responsive despite the fact that it was the final lesson of the semester before the final exams. Almost all the students seemed to be eagerly participating in the activities and following the teacher's instructions carefully. Shuei Li used more social chit-chat phrases, thus offering her students a spoken flavor of the target language. She remembered to praise them every time they made an effort and this seemed to provide the students with encouragement to do better.

Her classroom management skills were good and she did very well in terms of realizing her lesson plan. The lesson flowed very smoothly and it did not sound like the last of the semester. Both the teacher and the students were enthusiastic and performed well.

THE DISCOURSE ANALYSIS OF THE TRANSCRIPT

Wajnryb (1995) defines *Mitigation* as the linguistic means by which a speaker deliberately hedges what he / she is saying by taking into account the reactions of the hearer (as cited in Bailey, 2006, p.189). I am going to first analyze the transcript (you can refer to Appendix IV for the whole transcription) according to three major types of mitigation in supervisory discourse she describes as: (1) *hypermitigation*, meaning there is so much mitigation the message is overly softened, often at the expense of clarity; (2) *hypomitigation*, meaning there is too little mitigation and the message is so direct as to be blunt; and (3) *above-the-utterance-level mitigation*, meaning the softened criticism is accomplished at the discourse level (ibid.:166). Later I will examine and discuss in detail the types of utterance level mitigation used in the feedback session.

Hypermitigation Devices

There is none as I was aware of the significance of not being too indirect in putting across to the supervisee some negative feedback. I was lucky in that my supervisee was one of my best classmates and she herself had asked me to observe her in the first place. I knew that I would not have to be too indirect to express any negative criticism for fear of performing a

face-threatening act. And then again there was not much to criticize as the teacher seemed to have followed my advice about such issues as increasing her use of L2 and the variety of social chit-chat phrases and expressions even drawing the attention of the reluctant students, whom she mostly expected to act sensibly as college students, by directing comprehension check questions and attention checking.

Hypomitigation Devices

They are almost non-existent as I was determined to avoid acting the supervisor Wajnryb (1994a) refers to as “up-front, blunt and totally frank”. The closest I might have come to the level of hypomitigation could be the point where I indirectly criticized the teacher for not doing much on the reluctance of certain students and say “Oh, I would definitely do something about it. I mean their attendance and behavior. I wouldn’t ignore their reluctance and would definitely try to involve them in all the activities”. The message is indirect but clear and therefore it runs the risk of threatening the face of a teacher with whom one may just have a formal relationship. Another example is when I asked my supervisee how many of the students she would fail. But it was not a question criticizing a negative behavior. I was only being a little nosy as we teachers do not usually announce to others the number of students we will have to fail.

Above –the-Utterance- Level Mitigation Devices

Example: “I wish I were one of your students in this class. But not everybody was so enthusiastic, I’m afraid. I mean the two Asian American guys at the back.” Here I prepare the supervisee for the forthcoming negative feedback by expressing my admiration for a positive side of her teaching.

Utterance-Level Mitigation Strategies Used

Wajnryb classifies three main types of mitigating strategies as syntactic, semantic and indirect and what follows are examples from the transcript (I should note that no instance of the use of indirect mitigation strategies has been observed).

a. Syntactic Mitigation Devices Used

Tense shift: “would you change anything about your teaching style, the textbook you use or anything?”

Negating: “I wouldn’t ignore their reluctance”.

Interrogatives: “Why do you think some of them have been so irregular in their attendance?”

“What about their performance in the oral sections?” “How are you planning to teach the course next year?” “I mean, would you change anything about your teaching style, the

textbook you use or anything?” These questions all suggest alternative practices, which might as well have been tried by the teacher, rather than directly mention those alternatives as possible solutions.

Modal verbs: “I would definitely do something about it” “I wouldn’t ignore their reluctance and would definitely try to involve them...”, “Would you change anything about your teaching style?...”

b. Semantic Mitigation Devices Used

Wajnryb’s main semantic mitigation strategies for mitigating direct utterances and examples from the transcript are as follows:

Qualm indicators/Hesitation markers: “You know, we teachers kind of know who is likely to pass or fail...”

Delaying asides: “I wish I were one of your students in the class, too. But not everybody was so enthusiastic, I’m afraid.”

Lexical hedges/Metaphorical lexemes: “Well, you can’t learn much unless you do what it takes” with the hidden message that teachers should somehow get their students to make an effort to learn through various techniques.

Style shifting: “Well, you can’t learn much unless you do what it takes.” This example includes the use of impersonal “you”, which creates an informal and indirect effect.

There normally are more subcategories under Semantic mitigation strategies but I do not seem to have used them in abundance, which suggests that I preferred being more direct than indirect, which my supervisee also observed and verbalized to me during our post observation session as can be seen in the transcript. But my directness was carefully worded and it benefited from the informal relationship I had with my supervisee outside the classroom.

Furthermore, I practiced utmost attention to not threaten my supervisee’s face and encouraged her to reflect on her own professional skills in a cooperative atmosphere. In terms of the Johari Window named after its creators, Joseph Luft and Harry Ingram (1969) I tried to help her to move from the blind self quadrant to the open self quadrant in terms of her weaknesses (as cited in Bailey, 2006, p.38).

CONCLUSION

In this paper I have discussed the outcomes of the supervision I have provided for two of my classmates focusing on one of them in depth in terms of the mitigation strategies I used and all the insight I gained out of the process as an experienced practicing supervisor. I have had the opportunity of developing my own professional skills by experimenting with constructs such as pre-observation conferencing and cooperative and non-directive supervision. I also became aware of the importance of listening to the supervisee as well as of providing them with advice for professional development. I also realized that the supervisees benefit much more from the supervisory process if they are encouraged to discover their own strengths and weaknesses through carefully worded input including various forms of

mitigation accordingly. This new perspective into supervision helped me to discover my own strengths and weaknesses as a supervisor.

Throughout the entire supervisory process with both classmates my priority was to perform a non-directive performance as I came to understand that it was the most viable option allowing more opportunities for professional development for both participants. I followed the argument offered by Bailey (2006) that in the non-directive approach, supervisors' responses to teachers' ideas should not be to agree or disagree immediately but to encourage teachers' reflection and draw out further ideas based on that reflection, which was something that I had not considered before with the pre-service teachers I supervised and I tended to be very judgmental of their performances believing that direct criticism would save us time and energy and accelerate the supervisees' professional development. This time I avoided judgmental comments and tried to establish a close interaction with my supervisees in an effort to allow room for reflective supervision. My guiding principle in this endeavor was Sergiovanni's (1985) argument that teachers and supervisors must join forces "in trying to make sense of complex situations, in sharing perceptions, and in arriving at 'treatments' and other courses of action together" (as cited in Bailey, 2006, p.332).

I have every intention to put into practice all the outcomes of this supervisory experience and hope that both my pre-service teachers and I will be benefiting highly from this experience. There is a lot of potential in the application of such analysis also for those supervisors out there who need to improve their performance and want to have a hand in the professional development of their colleagues and student teachers.

APPENDICES

Appendix I: Observing an ESL Class with Brad Watson

After a friendly and relaxed pre-observation session at the Graduate Teaching Assistants room of the Applied Linguistics Department, I have arranged observing a full ESL lesson with Brad Watson, a classmate from my Teacher Supervision course at an American State University. I was planning to audiotape the pre-observation session as well as the class observation itself. When I raised the issue, Brad said that it would not be a problem for him as he himself would videotape his lesson to be observed and that he could provide me with a copy of the recording if I wanted to have one, which was very relaxing. His trust in himself and me was very comforting. Walen and DeRose (1993) argue that trust is the foundation for productive communication and opens the door for self-evaluation (as cited in Bailey, 2006, p.189).

Brad taught a low intermediate level reading class of 12 students in their early 20s; 8 Saudi Arabians, 1 Greek, 1 Korean, 1 Chinese and 1 student from Kongo. I started audio-taping the class and taking detailed field notes along the way.

He started his class with a warm up session talking about the quiz results for about a minute and mentioned his sore throat asking them to be tolerant toward the quality of his voice. From the way the students responded to this, I inferred that he had created a friendly relationship with the class. He projected an image of food on the screen about the use of

chemicals in food processing and asked if they were familiar with Asian food with a few students answering eagerly, which took about two minutes.

He then moved onto an activity based on some flashcards which the students had apparently been given in the previous class. He asked them to return them. While they were doing so, he checked their work praising them. The flashcards were supposed to be filled with additional sentences about various food items.

In the next stage he asked them to share their sentences with a friend and then invited a female student to the board to share her sentences with the rest of the class. He modeled a sample interaction with her about the ingredients of some food from her flashcard. After checking their understanding of the procedure, he asked the students to stand up and pair up with somebody with the same color shoes and role-play similar interactions. The students did this a bit reluctantly, which in my opinion might have been due to my presence in the classroom. While they were carrying out the task, he listened to them closely by standing near and praising them. He then got two pairs at the board to do it for the rest of the class and expressed his satisfaction with their performance. At this stage, almost all the students seemed to be actively involved by either doing the activity or listening to those performing at the board except for a Saudi boy in the back of the room.

Students returned their flashcards and the teacher asked them to put away their cell phones as it was time for the quiz. Receiving their quizzes, the students started dealing with them quietly with a few occasional students approaching the teacher's desk to ask for a few clarifications. Ten minutes later, the students received the second part of the quiz when one of them mentioned some discrepancy with the instructions and the teacher explained it to the whole class thanking the student.

After the timely completion of the quiz, they moved onto checking the answers by looking at the questions on the screen. The teacher got individual students answer the questions and wrote the answers in the gaps. He read them aloud very clearly despite the problem with his throat, which was worthy of notice.

After the quiz check, the teacher handed the students an article entitled "Chinese food syndrome" asking them to read it and mark the unknown words. He then asked them to make an original sentence about the main idea and prepare three "Why" questions about the text. Receiving a question for task clarification from a student, he did that making sure everybody understood it.

After a comprehension question was answered by a student, the class worked on the article for three minutes with the teacher closely monitoring their performance. After an extra three minutes granted by the teacher, they were asked to tell him about the words they did not understand. The problem words were explained by the teacher and various students.

For the last five minutes of the class time the class got into two large groups and shared their "Why" questions with each other. When one of the groups experienced a problem the teacher dealt with it and let the other group hear his explanation by saying it out loud.

The teacher called time and assigned homework by drawing everybody's attention on the screen. Before the class left, he handed out their previous works.

The first thing that attracted my attention about Brad's style of teaching was his precision with time management. He smoothly followed his lesson plan without causing any gaps and handled questions confidently in spite of a sore throat. The way he reflected individual student feedback to the rest of the class was also one of his strengths.

What seemed to be missing from the atmosphere was the lack of enjoyment in the classroom. Knowing the relaxed and jovial nature of his, I must admit that I had expected a more fun class with enthusiastic student participation. The students did participate but there was a lack of enthusiasm in their participation. If Brad had not told me that it was a very relaxed class and my presence would not affect their performance at all, I would not have worried but it was the case.

I guess Brad should depend more on his inter-personal skills that he exhibits outside the classroom. His students would highly benefit from his relaxed manners and use of colloquial expressions which, he could perfectly adopt as a native speaker. Such a change in his instructional behavior might help his students to relax as well. As a result, they would likely get more actively involved in the activities and progress more.

Appendix II: Observing a Chinese L2 Class with Shuei Li

Observation I

April 10, 2013

I observed Shuei Li twice teaching Chinese to an undergraduate class of 20 students. The original class population was 24 but there were drop-outs, hence the present number. It was an all skills class with special emphasis on writing due to the distinctive writing system used. Both lessons were audio-taped and followed by post-observation conferences.

When I entered the class, she had already started delivering some hand-outs to the students. The atmosphere was relaxed and friendly. The teacher mostly spoke in English and occasionally used Chinese while interacting with the class. I soon noticed that the handouts were related to the quiz they were given the previous week and they were checking their answers to the quiz questions together.

The teacher asked who had certain Chinese words on their handouts for the English words she called and put the students having the same words into pairs to make sentences with them. When their sentences were ready, they shared them with the rest of the class by reading them aloud. During the activity the teacher attended the students closely and answered their questions in English. What attracted my attention at this point was that she did not share the outcome of this interaction with the rest of the class. The good thing was that all the students were actively involved. Her attitude to the other pairs checking their work closely and answering all their questions attentively gave me the impression that she had a good rapport with the class. Three minutes later the teacher had groups of students read their sentences aloud with the whole class repeating after them in chorus. She remembered to praise the groups in L1.

As the next activity the teacher displayed a dialogue about ordering food on the screen and had the whole class repeat the lines from the dialogue in chorus. The students joined in eagerly.

After that the teacher mentioned an assignment about the students' sending her e-mails about their favorite food expressing her dissatisfaction that not many students had replied. Next up was a listening activity which required ordering the sentences heard in the recording. She warned the students not to look at the script in L1 and praised them saying "Good Job" again in L1 when they carried it out successfully. The teacher then allowed them to check their answers against the text and a chorus repetition followed.

The following task was a pair work activity in which students chose one of the four alternative dialogues in their handouts and practiced it with their partners. The instructions, which were given in L1 again, were eagerly followed by the students. Afterwards the teacher chose a particular pair to role-play their chosen dialogue at the board, which they did well and got warmly praised by the teacher and the whole class. One of the pairs at the board included a quiet, usually reluctant looking male student, who rendered the dialogue very well and the class liked their performance very much particularly because of the quality of his voice as I understood from the comments made by the other members of the class.

Next up was work on a study guide and a worksheet about the upcoming final quiz. The class started working on them immediately. The teacher then put some incomplete rules on the screen and asked the students to work them out. The class responded eagerly and the rules were completed successfully.

The next stage of the lesson was devoted to reading, which was carried out through handouts with a passage and comprehension questions. The teacher asked the students to work on them on their own and monitored them closely by answering the questions she was asked by individual students. In the mean time she kept praising them in L1 and L2. She also asked them to write their names on the back of their handouts, which she said was going to help her check their attendance. I found her approach to checking the attendance very practical.

The last section included students' Powerpoint presentations on Chinese culture. The teacher asked for some volunteers to deliver their presentations and three students volunteered to do so. It was a presentation about Chinese education system and was made in L1. The content was quite interesting and led to some comparison between the American and Chinese systems. Despite the quality of the content the presenters seemed much too relaxed and even indifferent to what they were doing.

After the presentation the teacher thanked the three students and gave the class their quiz papers back and the class concluded.

Appendix III: Observing a Chinese L2 Class with Shuei Li

Observation II

April 23, 2013

When I entered the room for the second half of the lesson, the whole class was listening to the teacher very carefully. She was speaking Chinese and asking questions about the images of various clothing items on the screen. Whenever the students had difficulty answering, she helped them in L1 and L2.

She put different Chinese characters on the screen and directed questions to the individual members of the class. They were fully involved listening to her very carefully. One of the questions directed to a male student was about a pair of boots and he hesitated for a while. The teacher helped him put a sentence together and he seemed to be relieved.

Later the teacher moved onto the exam practice asking the class to find two partners and form groups of 3. She provided them with handouts containing model questions they were likely to answer in the written final exam. Except for two Asian-American male students in the back they all did that started working eagerly. The two students remained silent for a

while and then somehow started working on the practice questions, too. The teacher monitored each group closely and gave them immediate feedback.

About three minutes later the teacher displayed the oral interview schedule on the screen asking the class to consider changing their original slots as she would be busy presenting her MA graduation presentation to her Department. The students offered alternatives and it was settled in an orderly manner.

Next the teacher asked them to take out the previously handed model oral interview questions and practice them with a partner for the next five minutes. She said that she was ready to answer any questions they had. After a while the teacher displayed 10 sample interview questions on the screen. Most students started working on their own with a few others working together in small groups. The teacher walked about the classroom dealing with individual problems. While almost the entire class was busy with this, the two boys in the back enjoyed their private conversation. On noticing their indifference, the teacher directed a few questions to one of them conducting an interview about his major. To my surprise he was able to answer her questions and we learned that there was no equivalent for it in Chinese.

The teacher then called for the attention of the class, explained a few important aspects of the oral interview in L1 and went onto asking individual practice questions. Later she reminded them of the oral interview task of reading a passage aloud and answering questions about it. She showed them a sample reading text on the screen, started reading it aloud with the whole class joining her except for the two students in the back. After this the teacher asked them to turn to a certain page in their text books for a narration. She passed handouts to the class and asked them to get into pairs for a gap-filling activity about the same reading text. They started work with the teacher closely monitoring them. At this point I was pleasantly surprised to see that even the two students in the back were doing the task individually.

After this activity the teacher asked them to move onto a speaking activity in their handouts. The students tried to fill out the gaps in a dialogue individually and they were called on to read their answers aloud.

The teacher concluded the class and asked the students in L2 not to be late for their oral interviews, which they seemed to have understood. One of the students asked her in L1 where the oral interview would be held. In response the teacher displayed the required information on the screen while most of the students were leaving the classroom.

Appendix IV: The Transcript for the Post-Observation Conference with Shuei Li after the Second Classroom Observation

In the following transcript S stands for the supervisor (me) and T represents the teacher (Shuei Li).

S: Hi Shuei Li, ready for the feedback session?

T: Yeah, let's do it but please don't record it.

S: You know that I have to but OK, as you like it. I'll take notes then. Right, let me first share with you my observation notes. When I entered the class everybody was all eyes and ears listening to you. You mostly spoke in Chinese and they seemed to follow you without much difficulty. It was the exam practice you mentioned during the pre-observation session right?

T: Yes. As their proficiency level is not high, I had previously given them 30 questions likely to be asked so that they would not panic in the exam. I only made a small percentage of them into exam questions but the result wasn't very promising. We then agreed to decrease the number of questions to 10 but they would have to study transcribing and memorizing them all, which I thought would be harder but it seems to work better. Yes, that's what we were working on when you entered the room.

S: I see, and I liked the way you code-switched while interacting with them this time and it seemed to work well. Even I was able to pick up a few words of Chinese from the context.

T: Really? Great!

S: Yes, of course. I wish I were one of your students in the class, too. But not everybody was so enthusiastic, I'm afraid. I mean the two Asian-American guys at the back.

T: You're right. You know what? I had been teaching at college level for three years in China before this job and my students always worked hard and participated in the class doing their best. I expect my students here to act like college students and I don't really warn them about their behavior.

S: Oh, I would definitely do something about it. I mean their attendance and behavior. I wouldn't ignore their reluctance and would definitely try to involve them in all the activities.

T: Yes, of course. You are very experienced. One of the two most experienced students in the (supervision) class actually and your observations are very sharp.

S: Sharp? What exactly do you mean by that?

T: I mean you observe very carefully. You do it so professionally. You do not miss anything and your comments are always to the point.

S: Oh, are they? I am glad to hear you say that. What about the other students in the class? Why do you think some of them have been so irregular in their attendance?

T: Most students take Chinese just to complete their credits. Some of them are heritage students and they speak Chinese with their parents at home. They are very fluent with the language but they don't do well in the exams. Another thing is that they are stuck between two cultures. 6 students dropped out of the course already and a few others have been very irregular, thus missing a lot of instruction. The two students in the back are clear examples of this attitude.

S: But they can at least read and understand the Chinese characters. I find it a good achievement. It must have been very hard for them to get used to the writing system. You must be proud of yourself.

T: Oh, thank you. When they failed the reading sections in the initial quizzes, I prepared new reading texts for them to study in order to improve their performance. We studied them together and it seems to have worked.

S: What about their performance in the oral sections?

T: Well, nobody fails the oral interview. We have practiced certain skills previously such as reading aloud, introducing yourself and the like, and they are good at them. They only want to speak the language, they don't want to read or write.

S: Why is that?

T: Well, most of them taught that it would be an experience similar to learning Spanish. Can you believe it? They had no idea what it was actually like.

S: Then why did they choose to study it in the first place? I mean they could have done other courses or languages for their credits, couldn't they?

T: Because of their ignorance. As I said, they just wanted to complete their credits and the heritage students chose it thinking that it would be so easy for them to pass the course.

S: How many of them are likely to fail? I mean have you decided yet? You know, we teachers kind of know who is likely to pass or fail according to their general performance and attitude.

T: Well, 10% of the student population is failing due to their lack of attendance already. I haven't finished marking their papers yet so I don't know.

S: How are you planning to teach the course next year? I mean would you change anything about your teaching style, the textbook you use or anything?

T: There won't be a next year. I am graduating, you know. I have already made certain changes about my teaching, anyway. I have focused more on speaking skills but some of them didn't like it. One of the students even questioned my teaching skills.

S: Really? Well, you can't learn much unless you do what it takes.

T: Absolutely.

S: Thank you for allowing me to supervise you, Shuei Li. It was a great pleasure for me to work with you.

T: Sure. The pleasure is mine. I enjoyed it, too.

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Chapter 40

**A COMPARISON OF THE CORRECTIVE
FEEDBACK PATTERNS OF NATIVE AND NON-NATIVE
SPEAKING TEACHERS OF ENGLISH:
TURKISH AND AMERICAN ELT SETTINGS**

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ABSTRACT

Learner errors and how course instructors should react to these errors have been studied extensively by many different people up to now. This aim of this chapter is to compare and contrast the basic corrective feedback patterns used by native and non-native speaker teachers of English in two different ELT settings, a Turkish and an American EFL setting. Classroom conversations of one native (NS) and one non-native speaker (NNS) teacher of English from Turkish EFL setting and one NS and one NNS teacher of English from American ESL setting in reading-based courses were video-recorded for four weeks and they were transcribed by the researchers. The findings of this chapter indicate that NS teachers of English are more tolerant about learners' spoken errors than NNS teachers of English but they try to correct as many pronunciation and lexical errors as possible. On the other hand, NNS teachers of English do supply corrective feedback for lots of grammatical errors but they are not as sensitive as NS teachers of English about the pronunciation and lexical errors in both contexts.

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INTRODUCTION

There has been considerable amount of research on feedback in the last few years. The data gathered as a result of the research have exemplified different issues related to feedback. A part of the research investigates what type of learner error is corrected and in what ways (Chaudron, 1977; Fanselow, 1977; Sheorey, 1986; Lyster, 2001; Morris, 2002a & 2002b), another aspect of the research is associated with the effect of different feedback types on learner performance (Guntermann, 1978; Carroll et al., 1992; Dekeyser, 1993; Lyster & Ranta, 1997; Leeman, 2003; Lyster, 2004; Ammar & Spada, 2006). A third but less extensively studied dimension of feedback-related research is about the differences of corrective feedback according to teacher variables such as gender (Lee, 2002), and experience (Yoneyama, 1982). Allright (1975) points out that research on teacher feedback supplies information about how effective teacher's interaction is and how language learning takes place. Most of the research above is based upon the idea that comprehensible input, by itself, is not adequate to explain the complex phenomenon of second/foreign language acquisition; negative evidence (i.e., information about ungrammaticality) is also an important requirement (Panova & Lyster, 2002), which will enable learners to identify the differences between their actual productions and the original forms in the target language and to modify their interlanguage accordingly. One of the most influential ways of supplying this negative evidence in the classroom is through corrective feedback.

As suggested by Chaudron (1977, p.31), *corrective feedback* refers to “any reaction of the teacher which clearly transforms, disapprovingly refers to, or demands improvement of the learner utterance”. Lyster & Ranta (1997) developed a “corrective discourse model” based on this definition of corrective feedback. This model consists of three moves, which are: (a) error, (b) feedback and (c) learner uptake. Error is the utterance which is not well-formed. In Lyster and Ranta's classification, feedback is examined in six groups, which are exemplified below – (a) explicit correction, (b) recast, (c) clarification requests, (d) metalinguistic feedback, (e) elicitation, and (f) repetition. Learner uptake, in this model, “refers to a student's utterance that immediately follows the teacher's feedback and that constitutes a reaction in some way to the teacher's intention to draw attention to some aspect of the student's initial utterance” (Lyster & Ranta, 1997, p.49). Uptake was considered to be either an indicator of how effective corrective feedback is (Chaudron, 1977) or as an aid for learners to notice the gap between the target form and their interlanguage form (Mackey et al., 2000). Lyster and Ranta (1997) identify two types of uptake, which are “*repair*” and “*needs repair*”. In repair, learner error is corrected with the help of corrective feedback, whereas in needs repair, corrective feedback does not bring about the correction of learner error. A number of researchers also focused on the concept of “uptake” and its role in the process of language acquisition. Lyster & Ranta (1997) contend that learners are able to practise using language items by means of uptake, which may lead to their automatic retrieval, Ellis, Basturkmen and Loewen (2001) suggest that uptake may be facilitative of acquisition.

In the corrective feedback model suggested by Lyster & Ranta (1997), the error treatment sequence is as in Figure 1.

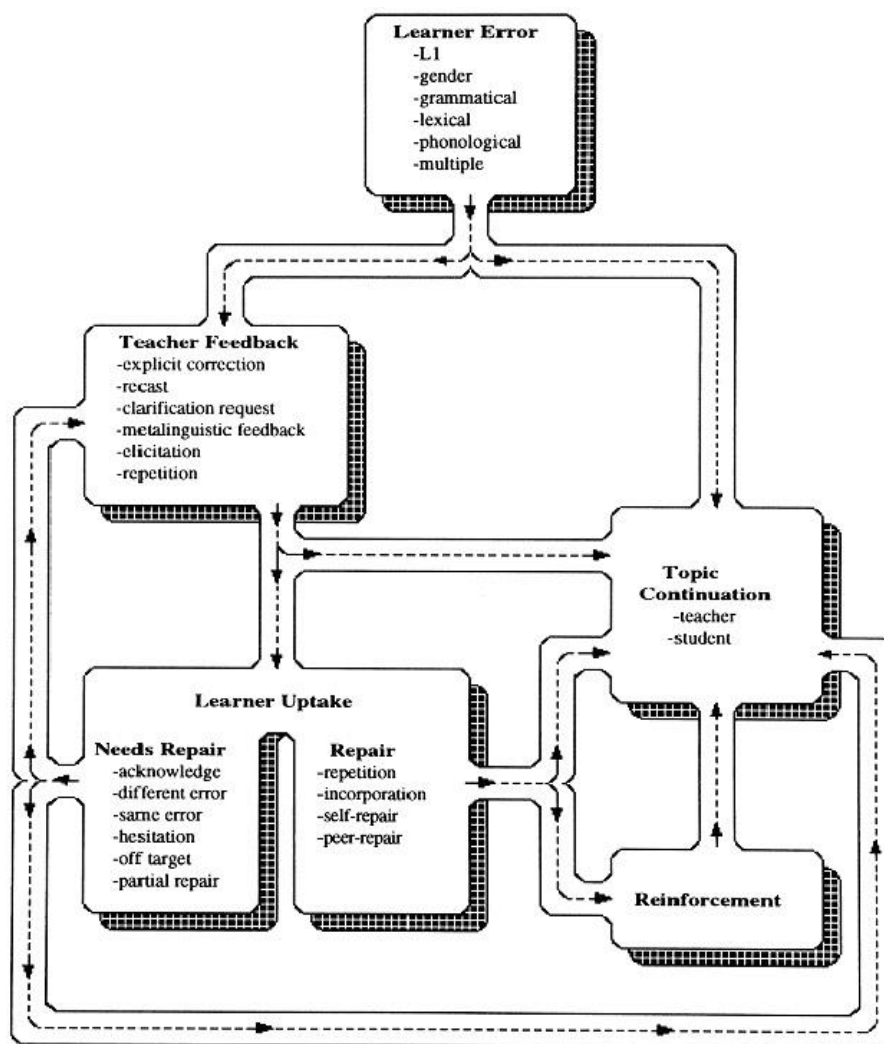


Figure 1. Error treatment sequence by Lyster and Ranta (1997).

CORRECTIVE FEEDBACK TYPES

The following corrective feedback types and their definitions were taken from Lyster & Ranta (1997) and the examples are from 10-11 year-old students in an ESL class (Lightbown & Spada, 2006, p.126-127).

Explicit correction refers to the explicit provision of the correct form. As the teacher provides the correct form, s/he clearly indicates that what the student had said was incorrect (for example, ‘Oh, you mean...’, ‘You should say ...’).

S The dog run fastly. (*student error*)

T 'Fastly' doesn't exist. 'Fast' does not take -ly. That's why I picked 'quickly'. (*explicit correction*)

Recasts involve the teacher's reformulation of all or part of a student's utterance, minus the error. Recasts are generally implicit in that they are not introduced by 'You mean', 'You should say', or 'Use this word'.

Clarification requests indicate to students either that their utterance has been misunderstood by the teacher or that the utterance is incorrect in some way and that a repetition or a reformulation is required. A clarification request includes phrases such as 'Pardon me...?' It may also include a repetition of the error as in 'What do you mean by...?'

T How often do you wash the dishes?

S Fourteen. (*student error*)

T Excuse me? (*clarification request*)

S Fourteen.

T Fourteen what? (*clarification request*)

S Fourteen for a week.

T Fourteen times a week (*recast*)

S Yes. Lunch and dinner.

Metalinguistic feedback contains comments, information, or questions related to the correctness of the student's utterance, without explicitly providing the correct form. Metalinguistic comments generally indicate that there is an error somewhere (for example, 'Can you find the error?'). Also, metalinguistic information generally provides either some grammatical terminology that refers to the nature of the error (for example, 'it's masculine') or a word definition in the case of lexical errors. Metalinguistic questions also point to the nature of the error but attempt to elicit the information from the student (for example, 'Is it feminine?').

S We look at the people yesterday. (*student error*)

T What is the ending we put on verbs when we talk about the past?
(*metalinguistic feedback*)

S e-d (*learner uptake*)

Elicitation refers to at least three techniques that teachers use to directly elicit the correct form from the students. First, teachers elicit completion of their own utterance (for example, 'It's a ...'). Second, teachers use questions to elicit correct forms (for example, 'How do we say x in English?'). Third, teachers occasionally ask students to reformulate their utterance.

S My father cleans the plate. (*student error*)

T Excuse me, he cleans the ??? (*elicitation*)

S Plates?

Repetition refers to the teacher's repetition of the student's erroneous utterance. In most cases, teachers adjust their intonation so as to highlight the error. In the following example, the repetition is followed by a recast.

S He's in the bathroom. (*student error*)

T Bathroom? Bedroom. He's in the bedroom. (*repetition*)

Multiple feedback includes more than one type of feedback supplied by the teacher as a result of the students' erroneous utterances.

Among all these types of feedback, *recasts* are one of the most commonly studied types of corrective feedback in different settings such as L1 acquisition (Farrar, 1992; Saxton, 1997), SLA (Lyster & Ranta, 1997; Long, Inagaki & Ortega, 1998; Sakai, 2011) and EFL (Fukuya & Zhang, 2002; Yang, 2010).

The Significance of Corrective Feedback within the Scope of Sociocultural Theory

Sociocultural Theory (SCT), as suggested by Lev Vygotsky (1978), describes learning as a social process. In his theory, Vygotsky mentions the importance of social interaction in the cognitive development of an individual. In order to identify the connection between sociocultural theory and the process of language acquisition, Lantof (2006) identifies two basic constructs of sociocultural theory in terms of language development, which are mediation and internalization and the use of L2 by speakers as a mediator was paid extra attention by researchers working in this field (Frawley & Lantof, 1985; Ellis, 1997, 2003; Swain, 2000, 2001). According to Ellis (2009, p.12) language learning is defined as "dialogically based and that acquisition occurs *in* rather than *as a result of* interaction". In this sense, it is difficult to define L2 learning as a purely individual activity. As development, according to this theory, originates in the Zone of Proximal Development (ZPD), the guidance learners get from more capable peers or the collaboration emerging between a novice and an expert becomes extremely important. Corrective feedback is an important part of this collaboration taking place between learners and the teacher in the classroom.

As teachers constitute an important part of this process of error-feedback-uptake, their characteristics have got significant roles when their reactions, attitudes and personal features are taken into consideration. One of the most widely disputed teacher characteristics is their being native or non-native.

NS-NNS Teacher Dichotomy

With the increasing importance of English as a second/foreign language all around the world, the need for teachers who will teach this language has also increased. A long standing question deals with the instructional differences, if any, between NS and NNS teachers of English. Davies (1996, p.157) points out that "the native speaker is a fine myth: we need it as a model, a goal, almost an inspiration. But it is useless as a measure; it will not help us to define our goals." Likewise, Medgyes (2001, p.440) suggests that "...the glory once attached

to the NS teachers has faded, and an increasing number of ELT experts assert that the “ideal teacher” is no longer a category reserved for NS teachers.” Widdowson (1994, p.385) also mentioned similar things about the issue saying that “the very fact that English is an international language means that no nation can have custody over it.”

Most of the studies carried out up to now were either related to the student opinions of NS and NNS teachers(Samimy & Brutt-Griffler, 1999; Moussu, 2002; Liang, 2002) or related to the differences between them in terms of their evaluations of discreet out-of-context sentences (James, 1977; Sheorey, 1986; McCretton & Rider, 1993;). However, studies focusing on the classroom talks of native and non-native speaker teachers and their reactions to students’ oral language productions are very scarce. It is believed that this chapter will contribute to the related literature with the fact that it was carried out two different ELT settings in two different countries and that its basic focus is on the teachers’ reactions to students’ oral language productions in these two settings.

This work summarized in this chapter aims to answer the following research questions:

- 1. What kind of errors is committed in the reading-based discussions in the Turkish and American ELT settings by learners of English?
- 2. What are the attitudes of NS and NNS teachers of English towards these errors? Are NS teachers of English more tolerant of learners’ errors than NNS teachers of English?
- 3. What kind of corrective feedback do the NS and NNS teachers of English supply to the errors students make in the reading-based classroom discussions?

METHOD

Participants

The subjects for this study discussed in this chapter were 1 native and 1 non-native speaker teachers of English in a Turkish EFL context and 1 native and 1 non-native speaker teacher of English in an American ESL context, all of whom were teaching at the university level to adult learners with intermediate level of English. Demographic information related to the 4 teachers taking part in this study discussed in this chapter is given in the Table1 below:

Table 1. Demographic information about the participant teachers in both settings

Turkish EFL setting		American ESL setting	
NS Teacher of English	NNS Teacher of English	NS Teacher of English	NNS Teacher of English
Female	Female	Male	Female
American	Turkish	Korean	American
M.A.	PhD	M.A	M.A
5 years of experience	10 years of experience	6 years of experience	3 years of experience

Table 2. Demographic information about the participant students in both settings

Turkey		The USA	
NNS Teacher	NS Teacher	NNS Teacher	NS Teacher
20 students from Turkey	18 students from Turkey	2 students from Korea	1 students from Mongolia
1 students from Uzbekistan	1 students from Turkmenistan	3 students from Vietnam	4 students from Korea
1 students from Kazakhstan	2 students from Uzbekistan	4 students from China	1 students from Russia
2 students from Turkmenistan	1 students from Kazakhstan	1 students from Japan	6 students from Japan
		2 students from Samoa	1 students from China
		1 students from Timor-Leste	
		1 students from Germany	

Demographic information about the participant students in both settings are given in Table 2.

Instructional Context

The instructional context this study in this chapter includes two different countries and two different ELT settings. The classrooms in Turkey and the USA were both located at state universities and they both included intermediate level learners of English. In each setting, two different classes were chosen; one taught by a NS teacher of English and one taught by a NNS teacher of English.

Procedure and Interrater Reliability

In the writing of this chapter, reading- based courses were chosen because the researcher thought that the classroom interactions taking place throughout the discussions might lead to a greater amount of learner language when compared to more traditional teacher-centered lecturing sessions in grammar-based courses. Classroom interactions in both settings were audio-recorded for 4 weeks in both of these settings, where students and teachers came together for 4 hours a week. Before the recordings started, the teachers were not informed of the exact focus of these recordings in order not to influence the natural flow of the courses. After the recordings were over, they were transcribed by the researchers in order to carry out a detailed analysis and they were each numbered and described as “episodes” by the researchers. In each episode, types of learner errors, types of teachers’ corrective feedback and whether these types of corrective feedback led to learner uptake (Lyster & Ranta, 1997) were analysed with a view to finding out the similarities and differences between the

classroom interactions taking part in a class taught by a NS teacher of English and the classroom interactions taking part in a class taught by a NNS teacher of English.

Analyzed Categories

In this chapter types of errors and feedback were analyzed according to the categories shown in Table 3 below:

Table 3. Categories of analysis related to error and feedback types

Error	Feedback	Feedback Type
Grammar	Feedback	Explicit correction
Vocabulary	No feedback	Repetition
Pronunciation		Recasts
Other		Metalinguistic feedback
		Clarification request
		Elicitation
		Multiple feedback

In each classroom, 5 episodes of teacher-fronted text based discussion were analyzed and coded by the researcher. 10% of the data was chosen randomly. It was firstly coded by the researcher and then a training manual for the second rater was prepared by the researcher and it included the definition of each type of learner error, teacher feedback as suggested by Lyster and Ranta (1997) and student reactions –whether there was an uptake or not. In this same manual, for each type of learner error, and corrective feedback, one example was supplied. The examples in the training manual were not the same with the original data that the second researcher was asked to code. The rater is a researcher with a PhD in English language teaching who is working in the same department with the researcher. After the codings were compared and contrasted, interrater reliability was found to be .94.

FINDINGS AND DISCUSSION

The first research question this chapter aimed to answer was about the types of errors committed by learners in the EFL settings. The following table indicates the types of errors committed by learners.

As can be seen in the Table 4 above, the majority of the errors committed in both contexts consists of grammar and vocabulary errors. Some example errors are shown in the following excerpt which is one of the transcribed episodes in the American ESL setting, in a class taught by a NS teacher of English.

Table 4. Distribution of errors according to 2 different settings

Error Types	Turkish EFL NS Teacher	Turkish EFL NNS Teacher	American ESL NS Teacher	American ESL NNS Teacher
Grammatical	10	9	9	8
Lexical	7	8	5	3
Pronunciation	8	6	6	2
Other	3	1	2	1
TOTAL	28	24	22	14

Excerpt 1

22	T	OK, here it says “No pain, no gain”. What do you guys think? What are your ideas? What does this mean to you? Guys, listen up. You’ve heard that before?
23	Ch	You don’t have a pain. You don’t have a adventure (grammatical). You are challenging something. (inaudible)
24	T	Yeah, you are challenging. OK, anybody else?
25	Sh	When we young (grammatical), we don’t care about success (grammar), probably we don’t understand. But when we get older, we think we success (lex). We make long way until now like, I can’t explain. Past, we start when we born (grammatical). Now and past, all our way our success. Because we went kindergarden, is very success (lexical).. We learn how to eat, how walk, how to explain our feelings, so everything success (lexical).. When we start to working (grammatical), we always fall down. When we stand up and go next step next step and next step.
26	T	T: OK, good. Anybody else wanna share something? Any experience, any story?

In order to be able to answer the second research question of this chapter, in addition to the types of errors committed by learners in these two settings, frequencies and percentages of error treatment sequences were discerned for each instructional setting. Table 5 illustrates the numbers of errors in both settings and the ones that are ignored by NS and NNS teachers as well as the types of corrective feedback for these errors committed by learners.

Table 5. Frequencies and percentages of error treatment sequences in Turkish EFL context

	NNS		NS	
Number of Errors	28		24	
Number of Errors ignored	2		10	
Feedback Type	Number	%	Number	%
Explicit correction	-	-	-	-
Recast	17	65	7	50
Clarification requests	-	-	-	-
Elicitation	6	23	4	28
Metalinguistic feedback	-	-	-	-
Multiple feedback	-	-	-	-
Repetition	3	12	3	22

Table 6. Frequencies and percentages of error treatment sequences in American ESL context

Number of Errors	NNS		NS	
	14		22	
Number of Errors ignored	3		15	
Feedback Type	Number	%	Number	%
Explicit feedback	1	9	-	-
Recast	5	45	4	57
Clarification requests	-	-	-	-
Elicitation	2	18	1	14
Metalinguistic feedback	-	-	-	-
Multiple feedback	-	-	-	-
Repetition	3	28	2	29

As can be seen in Table 4 above, the NS teacher in the Turkish EFL context was more tolerant of learner errors in general. When she felt the need to supply corrective feedback, she mostly used “*recast*” and “*elicitation*” as forms of feedback. Likewise, the most common feedback types supplied by NNS teacher were “*recast*” and “*elicitation*”.

As it is shown in Table 6 above, in the American context, similar to the one in the Turkish context, the NS teacher was more tolerant of student errors; for this reason, he preferred to ignore most of the student errors. The tolerance of NS of English is quite apparent in Excerpt 1 above. Even though the utterances produced by the learner include a lot of grammatical and lexical errors, he simply ignores them.

This finding of the chapter is parallel to those of Arva & Medgyes (2000), Diaz (2009), Sheorey (1986), Hughes and Lascaratou (1982) which suggest that NNS teachers focus more on form and accuracy than meaning and fluency. As another similarity with the Turkish context, in the American context, too, both the NS and NNS teacher preferred to supply corrective feedback in the form of recast mostly (45% and 57%), and repetitions, respectively (28%, 29%).

When the findings of this chapter are taken into consideration, the finding that in both settings, recast is the most common form of corrective feedback in the foreign language classrooms is parallel with the findings of previous studies (Lyster & Ranta, 1997; Lyster, 1998b; Doughty, 1994). Moreover, the finding in the American ESL setting suggesting that “*repetition*” is the second most common form of corrective feedback is similar to that of Pica et al. (1989).

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Chapter 41

UPTAKE AND AUDIO RECORDINGS: EXPLORING LEARNERS' RESPONSES TO CORRECTIVE FEEDBACK

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ABSTRACT

While numerous studies have been conducted into the effects of corrective feedback (CF), learners are not often asked their opinions on why they incorporate or reject such feedback in their revised work. The classroom-based study discussed in this chapter builds on a previous study in which feedback types and error types were compared to uptake rates on a revised audio recording. Since feedback and error types seemed to show very limited correlation with uptake, further investigations were conducted to explore students' reasons for their responses to CF. Twenty one students were shown the original comments and data about their uptake and then interviewed briefly to examine their attitudes and approaches to the assignment. Results reveal a variety of possible reasons why students may be more or less inclined to make changes to a second recording based on their teacher's CF. An heuristic device to help teachers prevent problems with similar assignments and increase uptake rates is proposed.

INTRODUCTION

A great number of teachers believe that corrective feedback (CF) helps students improve their language ability, and it could easily be argued that we have good evidence for that belief. Numerous studies confirm that corrective feedback is effective at improving accuracy in revisions (Ferris, 1997; Ferris 2001; Sheen, 2007; Truscott and Hsu, 2008) and ultimately in learning gains (Sheen, 2007; Bitchener, 2008). More specifically, certain studies have

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linked modified output or uptake (meaning here an attempt at repair in response to CF) to higher learning gains (Sheen, 2008; Lyster and Ranta, 1997; Nobuyoshi and Ellis, 1993). Although this would indicate that the internal process by which students respond to corrective feedback and use it to make revisions would be a major subject of concern for teachers and researchers, limited research has been conducted to explore participants' perspectives on corrective feedback in real classroom environments. This absence has drawn the attention of researchers in recent years, such as Storch (2010), who calls for more of this type of research in particular in her critical meta-analysis of recent written corrective feedback research:

This call for more qualitative approaches to research on WCF does not imply that there is no merit in experimental research on the topic. Rather, what I argue is that in the desire to conduct more robust research, the pendulum has swung too far towards experimental studies. If the aim is to shed light on the impact of WCF on students' writing, then I would like to propose that future studies need to adopt a more qualitative and ecologically valid research design. (Storch, 2010; p. 44)

This chapter, therefore, seeks to contribute to our knowledge in this realm by examining students' reasons for varying levels of uptake in a real classroom situation by means of qualitative interviews. It additionally fills a rather notable gap in research because it concerns written corrective feedback on student audio recordings, a unique situation which fuses elements of both written and oral classroom communication.

LITERATURE REVIEW

Studies in the past have linked varying levels of effective response to numerous possible factors which could play a role in student uptake. These include misunderstanding of CF, affective factors and attitudes, developmental readiness, and attention and engagement.

Misunderstanding of CF

One of the earliest studies in CF was that of Fanselow (1977), who analyzed 11 different teachers in the classroom, their feedback habits, and student responses. In this chapter, it was speculated that confusion and ambiguity were playing a role in these interactions and leading to continued errors. One issue he pointed to was the fact that students may not have recognized a teacher's response as corrective feedback if it was too subtle: "When a student's incorrect response is followed by a subtle shaking of the head or 'again,' the student does not necessarily know that his response contained an error or know the location of the error. 'Again' can mean 'I did not hear you' as well as 'you made a mistake'." (588). Fanselow also draws attention to the fact that repetition may be used confusingly either for corrective purposes or for reinforcement, and that the inconsistency of response to errors in general may leave students unsure about standards of acceptance.

While not a major concern of researchers in subsequent years, the issue of misunderstanding has not gone unnoticed in more recent studies. Lyster (1998) points out that recasts may have lower rates of uptake simply because they can confuse learners for the same

reasons pointed out by Fanselow—that learners often do not recognize the more subtle corrective force in rephrasing or repeating and may in fact mistake these discourse moves for actions such as confirming understanding, reinforcing correctness, or to create a sense of solidarity with the interlocutor. Conrad and Goldstein (1999) also pointed to misunderstanding of written CF as a reason for unsuccessful revisions in their analysis of 3 students' papers and subsequent qualitative interviews. Egi (2007) additionally points out that the form of recasts can determine whether learners interpret them as responses to content or as CF.

Affective Factors and Attitudes

Several studies that examined the effectiveness of CF have pointed to the role of affective factors and individual differences. Sheen, in two subsequent studies, suggested that aptitude for language analysis may be strongly related to increased acquisition (2007) and demonstrated that low anxiety learners tended to outperform high anxiety learners when given CF in the form of recasts (2008). Dekeyser's (1993) study of Dutch high school students also showed a correlation between low anxiety and benefits of CF. High previous achievement and strong grammatical sensitivity, factors which were also associated with students who had higher rates of uptake in Dekeyser's study, could also be linked to these lower level of anxiety.

Goals and attitudes towards feedback are also considered in several studies. Storch and Wigglesworth (2010), in a quasi-experimental study of advanced level university students showed that students' attitudes and beliefs about good feedback and good writing in some cases led to resistance towards feedback that contradicted these notions and lower rates of uptake and retention. Swain and Lapkin (2002) similarly noted a resistance to feedback in their analysis of the process of revision in response to reformulated writing by one pair of adolescent French immersion learners. This resistance was only noted to occur, however, in two main circumstances: 1) if the reformulation contradicted a rule that had been internalized incorrectly or 2) if the reformulation contradicted their original meaning. On the other hand, when learners do not dispute the feedback, several studies show that a strong motivation towards improvement can have a positive effect on learners' revisions (Dekeyser, 1993; Conrad & Goldstein, 1999; Mackey, 2006).

Another related and interesting factor to consider is the role of the relationship between the teacher and the student. Lee and Schallert (2008) examine two different English learners in a Korean classroom and their attitudes about written feedback in depth. They discover that one key factor that influenced uptake on revisions was the level of trust in the teacher, pointing out that while one student embraced the comments, the other resisted them because of a suspicious attitude towards the teacher's competence. While the fact that the teacher was a non-native English speaker does play a role, the need to consider this relationship is important in any circumstance.

Developmental Readiness

Another individual difference that may play a role in student response to feedback is their developmental readiness and level of proficiency. Ammar and Spada (2006) for example, studied a group of primary school students' acquisition of third person possessive determiners and found that students' proficiency level had an impact on the effectiveness of feedback. They found that while high proficiency learners benefited equally from prompts and recasts, prompts were more effective for lower proficiency learners, indicating that the type of feedback may be less relevant for advanced learners. In an experimental study of adult and young adult learners of English in Australia, Mackey and Philp (1998) also divided learners into "readies" and "unreadies" in terms of their developmental readiness for question formation, and found that the "readies" were in fact better able to benefit from feedback and post-tests.

Attention and Engagement

Lastly, studies have also shown that where students focus their attention and how they engage with feedback may also play a role in the effects of CF. In one interesting study of oral CF by Sheen (2004) that analyzed four widely varied language classrooms in Canada, Korea, and New Zealand, both the salience of the recast and the extent to which students were oriented to linguistic form seemed to have a positive impact on rates of uptake. In other words, it seems that learners not only need to recognize the corrective force of the feedback, but it needs to have strong significance to them as well.

Lyster and Mori (2006) in a comparison of two different foreign language contexts, French and Japanese immersion classes, showed that a teacher's emphasis on accuracy may also play a role in increasing or decreasing rates of uptake in response to oral CF. Storch and Wigglesworth (2010) furthermore emphasize in the results of their study of pairs working to revise a piece of writing that learners who engaged more with the feedback demonstrated both higher rates of uptake and retention in a post-test. Hyland (1998) also examines and compares two learners' revision processes over a semester in depth, showing that each learner was driven by complex influences toward either the communicative force of language or the correctness of it. These studies all seem to imply that the area that matters to learners is where they tend to put their efforts.

BACKGROUND OF THE STUDY

This study reviewed in this chapter builds on a previous classroom-based research study which analyzed student uptake rates in three different freshman advanced oral communication classes at a Turkish university. In the original study, students were asked to do a series of digital audio recording assignments on various topics, followed by one re-recording of an assignment of their choice based on the teacher's corrective feedback. The original recordings and the re-recordings were compared for student uptake rates, where uptake was defined by an attempt, successful or unsuccessful, at repair. Of the 346 total CF moves analyzed, 56%

were classified as showing evidence of uptake. The CF was also coded and categorized by type of feedback (metalinguistic clue, explicit, recast, or clarification request) and by type of error (grammar, word choice, pronunciation, or content and organization).

Of the four CF types, the only type to have higher than average rates of uptake was metalinguistic clues, although when these were sorted by general metalinguistic clues (i.e., “grammar needs work”) from specific metalinguistic clues (i.e., “use past tense here”), specific clues had slightly lower than average uptake rates (52.2%) whereas general feedback, which leaves a broad range for attempts at improvement, showed a much higher rate of uptake (71.2%). Explicit correction and recasts had nearly identical rates of uptake at 53.2% and 54.5% respectively, and clarification requests had the only notably lower rate of uptake at 47.2%. This last finding was speculated to be due in part to the students’ and teacher’s likely inability to pinpoint the source of the communication breakdown.

Interestingly, error type also appeared to have little correlation with uptake rates, with all categories hovering around the average. The only category to have an apparently lower rate of uptake was pronunciation. This was believed to be due to students’ relatively limited training in pronunciation compared to grammar, word choice or content.

The re-recording assignment instructions
Recording #6: A Re-recording: Choose any ONE of your previous recordings and think about what you could have done better. Consider your fluency, your grammar, your pronunciation (stress and intonation especially), your vocabulary (including idioms and expressions), the content, and the way it was organized. There is always room for improvement! Improve it, practice it and re-record it. It may be slightly shorter, but it should still be close to the original time limits.

Figure 1. Re-recording assignment instructions.

Although the initial study yielded rather interesting results, it also raised several questions about the factors that lead to effective and ineffective corrective discourse. Certain surprising elements appeared in the data, such as the following conversation with a student named Ecevit (all names are pseudonyms) that arose in response to the original self-introduction recording. The conversation took place in writing, through comments posted to the file sharing website Soundcloud.com, through which students had been submitting their files.

*Ecevit: [audio]...read detective novels, to draw **caricatures**... T: [written comment] What did you say after detective novels?Ecevit: [written comment]oh no! I said "to draw caricatures", but it souds [sic] as if I pronounced "todraw caricatures". It's surely my fault that "to draw" sounds like a compound noun. Terribly sorry for that. :(Another thing, [commenting on a different corrective feedback move] my apology for the incorrectly-spelled words "outside of class, I mean, in my spare time" that you wrote down the accurate version of. :/*

T: [written comment] Actually it's the wrong word stress on caricature that was the problem http://oald8.oxfordlearnersdictionaries.com/dictionary/caricatures#caricature_1

Ecevit: [written comment] Absolutely right! The accurate phonemic transcription of "caricature" is supposed to be like /'kærɪkətʃʊə(r)/. Nevertheless, I pronounced it within the record like /'kærɪkətʃə(r)/, which is quite a dreadful mistake. ∴ Beyond that, this mispronunciation caused me to put away the stress on an improper syllable, the third one in order, I mean. ∴(Again and again I'm deeply sorry for all those mistakes you mentioned superficially. Next time, I hope I'll come up with a much more satisfactory job in your presence. ∴)

This student clearly showed meaningful interest in the corrective feedback his teacher was making, even commenting on errors that he made which were not evident in the corrective feedback, such as the incorrect vowel sounds in “caricature,” or possibly not even evident in the recording itself (“incorrectly-spelled words”). However, when his second recording was analyzed, his uptake rate was the lowest rate of all the students, with 0% uptake on 6 corrective feedback moves. Only two other students in the entire study demonstrated 0% uptake, and in both cases had received unusually little CF. Even the one general metalinguistic clue given, “Work on fluency mainly,” which would have been statistically more likely to result in uptake, was deemed to have no uptake by both analysts examining the data. He had clearly noticed and worked to understand the feedback, and had yet avoided every single error commented on. Further exploration was needed to understand his and other students' thought processes.

An additional interesting factor emerged which emerged when looking closer at individual study participants was the surprisingly wide distribution of individual uptake percentages that students demonstrated in their second recordings (see Table 1). With percentages of uptake ranging from 0% to 100%, and the group split into three roughly equal groups of “low,” “mixed” and “high” uptake, it became apparent that there was more variation from student to student than by CF or error type.

Table 1. Rate of uptake by student

Uptake Percentage Range	Number of Students in Range		Percentage of Students in Range	Classification
0%	3	11	20.4%	Low
1–24%	8			
25–49%	10	24	44.4%	Mixed
50–74%	14			
75–99%	7	19	35.2%	High
100%	12			

CURRENT STUDY: RESEARCH QUESTION

With this background in mind, an additional study was conducted with the following research question in mind: *What factors could be linked with high, mixed and low uptake rates in a closer examination of the revision process?* The intention of the research is

therefore to try to identify more precisely what external factors, behaviors, or attitudes led to more or less “success” on the second recording when success is measured by student correction of marked mistakes. While this definition of success can clearly be seen as faulty since students may have legitimate reasons to disregard the CF given by the instructor, examining the process from this point of view can still yield useful insights for instructors using similar assignments.

Procedure

In order to examine the reasons behind the varied rates of uptake, qualitative interviews were conducted with 21 randomly selected students in the following semester. All were full-time students in their first year of university in an English Language Teaching program, and all except one were Turkish citizens and native or near-native Turkish speakers. The groups were roughly even, with 5 students in the high uptake category, 8 from the mixed uptake category and 8 from the low uptake category. Interviews were conducted subsequent to final exams, ensuring that concerns about grades would not prevent students from answering questions honestly. Interviews were done in English, with students electing to enter either individually or in pairs, and lasted about 5 to 10 minutes per group. Learners were shown written versions of their original feedback in order to stimulate recall. Questions that were commonly asked included, “Can you tell me how you did the re-recording?” “What did you think the goal of the assignment was?” and “You didn’t fix many of your mistakes in your second recording—can you tell me why?” The conversations were recorded and then selectively transcribed, then analyzed for patterns. Some analysis of revisions not related to interviews is included as well.

RESULTS

High Uptake Learners

Of the high uptake learners, a pattern of self-reliance and dedication to self-improvement seemed to emerge. Three out of the five interestingly mentioned turning to outside sources, either a dictionary or a friend who could help. The teacher’s (“T”) original feedback seems to be used in conjunction with these sources.

T: Ah, so you fixed things that weren't on my feedback list either.

Abdullah: I was careful...for example “approximately, approximately, approximately. I tried again and again. And I look at a dictionary and your comments and I listen their pronunciation.”

T: Did you look at my feedback?

Aysel: Yes, absolutely. Actually at first I choose my special words and I look... them at the dictionary.

Adile: I get to listen my friend and he suggested me some things and then I fixed them.

T: So it wasn't just my feedback. It was your friend helping you?

Adile: Your feedback and his feedback.

A fourth student similarly seemed to emphasize her own role and effort in conjunction with the teacher's feedback.

Bahar: "I saw your comments in Soundcloud..."

T: Did you try to go back and look at the feedback while you were doing it? Did you think that was an important part of doing the re-recording?

Bahar: I feedback myself, and other recordings...I'm careful.

By saying "I feedback myself," she seems to imply that self-reliance and her own ability to discern her errors was a more important key than the instructor's comments.

The fifth student in this group emphasized the value he placed on how he could benefit from the recordings, perhaps indicating a strong intrinsic motivation toward self-improvement.

Serkan: I think our English speaking skill is improved by your recordings and the other homeworks because when I listen my voice on the Soundcloud on the first semester, it's so different from now, and I can make a sentence more easily than the first semester.

This appreciation for the value of the assignment seems to show that he approached the re-recording with a similar mindset to the other high uptake students.

Another theme that emerged amongst this group of students was effort and attention to detail, though these were not comments confined solely to the high uptake group.

Abdullah: I read your all comments and...the place where you comment, I re-record again. And I tried again and again. I re-recorded it 10 times or 20 times.

T: Mmm. You really wanted to fix all those mistakes.

Abdullah: For example, I pronounced it 'partner,' partner or partner, like that. It changed.

Adile: My grammar is always full of mistakes... I listened repeat and repeat...

T: So...was it really important for you to fix the grammar and the pronunciation mistakes in there?

Adile: Was it important? Yes, it is important for me because I want to fix them all. So I have to...be full of non-mistakes.

Interestingly, students in this group were not necessarily the most advanced English speakers amongst their classmates as measured by grades and impressions of instructors, but their dedication appeared to lead them to higher rates of uptake.

Mixed Uptake Learners

Amongst the 8 students with mixed uptake rates (between 25 and 75% uptake), the most common theme that emerged in interviews was that of making effort without achieving the

desired results. More than half of the eight students in fact had something to say along these lines:

Ferhat: While I am doing that assignment I was ill. [That's why] I couldn't get all of them. I tried to fix all of them but maybe I couldn't.

Binnaz: When I came to [that part of the recording], I couldn't do that. For example, while [the recording was going on], I said, "it doesn't about," for example. "It isn't about," I should say. That doesn't mean that I don't know the rules.

Sevkal: Actually I write your feedbacks into colorful papers and put them where I can see them, how can I say. And I just try it, but I just fix half of them.

T: Yeah. So you did try...Well I just noticed you have a hard time with past tense.

Sevkal: Actually in my all recordings there was a problem about past tense. I don't know why...when I try to use past I just forget it and I begin to use present tense.

Belgin: Actually I look what did you write, but I think I didn't [do] a good job. I forget. I try to do better, but I forget.

Aylin: I saw this mistake because you send me e-mail with this feedbacks and I search it again and again.

T: So you did look at the feedback?

Aylin: Yes.

T: So you do have any explanation for why you repeated the same mistakes?

Aylin: Maybe. I can't remember it. I saw one and I can try to fix. But already I have a difficult about the grammar, for example, article, and like that. For example, in first term, you said that, "your speaking and your pronunciation very good but your grammar is not good." I know that I have a difficult[y] about the grammar but I tried to fix it.

The students who made these kinds of comments seemed to express a certain amount of frustration at not being to achieve the goals they had set out for themselves. They were frequently aware of what they wanted to achieve ("it doesn't mean I don't know the rules"), and in some cases reported significant effort and deliberate strategies (such as the "colored" papers" described above), and yet still had not achieved a sense of success.

Interestingly, Aylin, a mixed uptake student and Serkan, a high uptake student, were an openly attached couple who participated in the interviews at the same time. When asked for their views on why Serkan was more successful in repairing the errors marked in the original recording, new explanations emerged:

Serkan: "I didn't do different things about it. I just read your explanation about my mistakes and I tried to fix them.

Aylin: "Maybe I didn't read correctly."

Serkan: And she's more excited, more than me.

T: Nervous?

Serkan: Because when she's record her voice, she's so excited about.

T: Nervous.

Serkan: ...Yeah, nervous.

Aylin begins to doubt her efficacy in understanding the feedback even though she reported having "searched it again and again," while Serkan suggests perhaps there are affective factors at play.

Another theme that emerged in the interviews in this group was that these students tended to report less detail in their approaches to the re-recording. One student, for example, reported paying attention to her errors briefly, but not feeling any particular need to correcting them with care:

Makbule: I looked again and then I found my mistakes, like grammatical mistakes like...I said. But only I looked but I didn't do anything about it. Yeah. Only I listen and my record and I yeah, there is mistakes. Like that.

Several students reported doing the recording spontaneously and without prepared notes, either because of time pressure, because they felt perhaps that it was a desirable quality, or because that it was sufficient to apply some effort to correction in this process.

Ferhat: I was ill, and its due date was about to expire, and I just opened the recorder and start to record.

Aylin: And as far as I can, I record spontaneously. I think that, for example, I push, not push, I open the recording and whatever I think I said and this change my speaking ability.

Makbule: So you noticed the mistakes, but did you try to do the recording in a natural way?

S: I did...but I didn't [just] record, but I repeat and I fix them.

Other students who took a less detailed approach to correcting their errors also reported being attentive to the feedback, but as a general note to keep in mind to improve their speaking ability as a whole.

Binnaz: Yes, for example, the first thing you said last semester was intonation. And after your suggestion, I was more careful intonation, for example, or grammatical [errors].

T: Can you just tell me a little bit about how you did the re-recording? Did you try to use the feedback?

Berkan: Well, I did use the feedback, but I didn't take specific parts of it. Because I know I have a very big flaw in grammar so I just tried to record it in a better way, so that grammatical mistakes are not that apparent. So I don't take your reflection point by point, but I take it as a general...grammatical mistakes was the general direction for me in that reflection.

Although uptake was measured mostly in terms of specifics, these students may have had success in this matter more generally.

A less common theme in this group, but one that is quite notable as well, was the suggestion that the feedback may not have been effective because it may not have been clearly understood by the recipients. On mixed uptake student, when asked to give a reason for why she may not have had as high an uptake rate as her interview partner suggested, "Maybe I didn't read correctly," in reference to the instructor's original feedback. Less directly, it emerged in the course of an interview with another student that he had not understood the use of capitals to indicate stress in the word, "hisTORic."

Can: As to the stressing errors, I couldn't get it because I don't know where to stress.
T: Ok, but does this make sense to you where I tried to put the word stress?
Can: Yes, right now, it does.
T: Ok, but the first time it didn't?
Can: No.

The instructor had incorrectly assumed that capitals would be a clear metalinguistic indicator for word stress. Although misunderstanding of CF appeared in a limited way in the interviews, it should be noted that numerous examples of misunderstanding of CF appeared in the original data, and that students are likely under reporting this aspect of concern due to lack of awareness in many cases. One example of this might be worthy of note is another student who, while she did not participate in the interviews, did reply to her teacher's comment and provided a bit of insight into the source of her misunderstanding:

*S (in original recording): I feel **myself** bad about it...[error in bold]*
T's CF: I feel bad about it
S: I feel bad about it so much but I am staying at dormitory and while I was recording, there were sounds like this and more. I hope you will [forgive] me. And I want to say that I will go my hometown, I am going to prepare a new record and send you. Excuse me please, good days Professor.

This unfortunate misunderstanding of the teacher's recast provides evidence that recasts can easily be misinterpreted as non-linguistic comments; here the student believes the teacher is saying she feels bad about the recording, when she is simply recasting an error.

In this situation, the student's difficulty in identifying this common Turkish L1 transference error was probably also compounded by the lack of both visual access and temporal proximity unique to the context of audio recordings. The lack of ability to highlight the particular error or add emphasis, intonation or gestures as would be possible in either written or oral CF respectively also adds to these types of problems. This second example from a separate participant who was also not interviewed also shows that the lack of ability to highlight an incorrect word merely guided the student to make an additional mistake rather than correcting the one noted:

*S:...in the middle of **the** Turkey...[error in bold; bold not included in original comment]*
T: no "the" is needed
S: in middle of the Turkey

Had the instructor been able to highlight the incorrect word as done here, the student would perhaps have been more easily able to target it and correct himself.

The last point to mention about the mixed uptake students is that students may have had personal agendas that were in conflict with the limited and inherently teacher-centered construct of uptake. One student, for example, explained rather directly why she felt that uptake was not always desirable:

T: Some of your mistakes you fixed and some you didn't. It was 50/50. Do you remember why some of them you didn't fix?

Binnaz: I don't remember, but I may have avoided it.

T: Okay.

Binnaz: Yeah, because if I find it difficult, I may avoid it actually, to be honest.

While it may have been preferable from the teacher's perspective to simply correct the errors as directed, from this student's perspective, correction added difficulty to the assignment, perhaps as a result increasing stress, frustration, or the likelihood of further errors. This comment may also be viewed in terms of stages of grammatical development, and the student may simply have resisted due to lack of developmental readiness. Another student similarly described a conflicting personal agenda:

Can: I just tried to make it more fluent because in my opinion my basic [in]adequacy is fluency because in my speech there are more stops. That's why I try to make it more fluent and no stops.

T: Ok, but I didn't say anything about your fluency, but I did say something about your word stress.

Can: I understand, but I did not consider them much. I just tried to make it better what I don't like in my speech, in my recording.

Whereas the instructor had noted and emphasized word stress as a key to increasing the quality of this student's speaking ability, the student himself had focused on what he felt was a more important area to work on.

Low Uptake Learners

Of the 8 students in the low uptake group (25% uptake or less), certain similarities with the mixed uptake group appeared and unique trends were evidenced as well. It's important to note that one of the key commonalities in this group that was unique compared to the others was that 3 of the 8 students in experienced problems with access to the feedback. One student reluctantly admitted that she had lost the feedback:

Gamze: Actually, I couldn't remember exactly, but I do, I think I do my best in the, in my assignments and I, certainly I had some deficiencies. But I don't know...

T: Well do you remember how you did it? Did you read my feedback beforehand? Did you think the feedback was important? Did you avoid the errors? Do you remember how you did it?

Gamze: Actually I...[asking for translation from partner in Turkish]

T: Lost?

Gamze: Lost. I lost your feedbacks.

T: Ah hah!

Gamze: Yeah, I lost my feedbacks. I only listen again and I try to do it again, honestly.

Another student, meanwhile, reported that the timing of the assignment and her personal circumstances prevented her from having access to the feedback:

T: Do you remember how you did that re-recording? Did you look at my feedback before you did the re-recording?

Nursan: Actually, I was...I recorded this re-recording during a journey. I was going to Istanbul, and I had to record it without seeing your comments.

T: Ah!

Nursan: Then I uploaded the re-recording and then I realized you had sent some comments on it.

A third student seemed not recall having ever seen the feedback:

T: I gave three comments and you didn't use any of the comments in the end. Do you know why?

Kader: No, I don't remember.

T: I just gave you a little bit of feedback on paper. I wrote...[reads comments]. You didn't change any of those. Do you remember seeing this feedback?"

Kader: No.

T: No?

Kader: No I don't.

T: Maybe you didn't see it.

Kader: Yes, I don't remember.

While this third student's response leaves some definite room for doubt, the fact that he did not recall the comments when they were shown to him does seem to indicate that he did not use the feedback to improve his re-recording.

Aside from these unique circumstances which would clearly limit uptake rates, the remaining 5 students shared interesting commonalities as well, the main one being that in most cases they used different words in the second recording. In some cases, this was simply an effect of their approach to the re-recording:

T: Do you remember what you did or how you did it?

Leyla: Actually, I can't remember. But, I think I make, I said some different things from first one. Not same things. So can be about that.

T: So why did you choose to say different things?

Leyla: I don't know because its...I...for example I open my phone and I say "Hi, I am [gives name]," whatever I thought at that moment.

T: So you didn't prepare it, you didn't like, try to write down your mistakes and fix them?

Leyla: No.

Usman: I sit and record with the phone, and I send it to the computer. I'm not listening to it. I just listen to it in the first place with the phone and if it's okay for me then I send it...

T: When you were doing the re-recording, did you look at my feedback?

Usman: No, I'm sorry, I didn't look at, to be honest, I didn't look at it. After I read the feedbacks once, I didn't read the feedback again. I did it on my own."

T: Okay, and why. Or why not?

Usman: I guess because I read the feedback and I didn't go back again. I'm not sure.

T: [...] You just read it once and you thought that was enough? Usman: Yes.

T: Do you remember what you were thinking about the assignment while you were doing it?

Buse: Actually, I read your comments about my first recording and there were some problems about my pronunciation, but I didn't know I have to, I need to record it again. [...] So I don't know if I could correct myself. I think there was some pronunciation problems. I remember that I correct them, like "Portuguese."

T: Yeah, like Portuguese and otherwise like, [...] "it becomes better and better, easier and easier," that was a little bit of grammar. Do you remember trying to fix those in your final recording? Or did you avoid them maybe? Did you avoid them as you were doing it?

Buse: I didn't avoid them [on purpose]. I just correct that word "Portuguese" and I think I didn't use that "easier and easier" again.

T: So you just avoided it [unintentionally].

Buse: Uh-huh.

In other cases, it appeared to be the same strategy, but a bit more intentional.

Orhan: In the re-recording I selected a new topic I think.

T: Ah, ok, maybe it changed.

Orhan: Yes, I didn't use this sentence in my re-recording. That's why I didn't correct it.

T: Do you remember why you decided to use a different story then?

Orhan: Yeah, I...I thought it would be more professional to choose another topic. And you said this sentence is not express your opinion, what you want to explain. That's why I selected another topic to speak about.

The student reported using different words in this case because he felt that it would express his ideas more clearly or that it would improve the quality of his recording as a whole. Had his intentions and his strategy of using entire new sentences and topics been taken into account in the process of determining uptake, the results may have been different. From a research perspective, however, it seems quite difficult in this context to determine accurately the intentions of the student in response to the original feedback.

Finally, Ecevit, the student who had been so interested in the original feedback, but whose classification was 0% uptake, revealed a similar strategy to the other students in this group. In his interview, he explains at first that he took a more natural, spontaneous approach to the recording:

T: How did you approach that assignment? How did you approach that re-recording?

Ecevit: I thought in the first recording, I, uh, I benefit a bit from the notes I had prepared for the recording, but in the second, the improved self-introduction, I tried a bit com...compromise. I just talked about a certain subject, I didn't prepare any notes, any reminders.

He also suggests that there may have been a misunderstanding, this time not of the CF itself, but rather of the goals of the assignment:

T: Were you trying to...I guess my impression is that you were trying to make it better by using different words, make it interesting.

Ecevit: Yeah [...] Is it unusual to do that?

T: Well different students did different things. So some students looked at it and they used the exact same words, but they just fixed their grammar mistakes. But you had a really different approach. You did something totally different, you described different things about yourself, and then...

Ecevit: I may have misunderstood that part.

He also later reveals a barrier to uptake similar to that of S12, the mixed uptake student quoted above, when he demonstrates a personal agenda for self-improvement that's in conflict with the teacher's corrective feedback.

Ecevit: In my opinion, I don't usually make grammar mistakes, grammatical mistakes in my records. But apart from that I just um, work, worked on my vocabulary.

T: So you're really focused on vocabulary?

Ecevit: Yeah, vocabulary. Because I think the only way English I can change the recording, improve the recording, is vocabulary.

These comments contradict the perceptions of the teacher and her feedback on the original recording. Of the 6 CF comments, 2 were classified as grammatical errors, 3 were pronunciation errors, and only 1 was word choice. While the teacher's perception was that grammar and pronunciation were the most meaningful areas for improvement, the student's perception was that vocabulary was “the only way” he could improve.

Table 2. Summary of findings: Themes in interviews by uptake level

High Uptake (N=5)	Mixed Uptake (N=8)	Low Uptake (N=8)
- Consulting with external sources - Use of dictionaries - Assistance from friends - Detailed attention to CF - repetition - point-by-point approach - Appreciation for the value of the assignment	- Perceived frustration in efforts to improve - Nervousness - Less detailed attention to CF - time pressure - spontaneous/natural recording - took “general direction” - Misunderstanding of CF - Intentional avoidance due to difficulty of uptake - Conflicting priorities between teacher and student	- Lack of access to CF - Lost - Physically inaccessible - Never received - Change in content/language choices - spontaneous/natural recording - new content perceived as preferable (“more professional”) - misunderstanding of assignment goals - conflicting priorities between teacher and student

DISCUSSION

While many of the factors examined here have appeared in previous studies as well, others arise that often ignored in less contextualized studies. One theme that arose in the interviews was misunderstanding. Lyster (1998) and Egi (2007) in particular point to recasts as being easily mistaken to have some other non-corrective role. While that problem did appear to arise in other data, it was not mentioned in particular by the students. The only thing mentioned was that the teacher's strategies for indicating stress were not clear to Can, and may not have been clear to other students as well. Indeed, it seems quite difficult for students to pinpoint the source of their misunderstanding or even for teachers and students to readily determine whether or not misunderstanding has even occurred. Beyond the interviews, however, other types of misunderstanding occurred as well, some which perhaps should be considered more deeply for the context of written feedback on audio recordings in particular.

Anxiety, as suggested by Dekeyser (1993) and Sheen (2008), also appeared to a small degree in the interviews with students, although it was only mentioned directly by one student describing another. It is interesting to note that that particular student seemed less inclined to offer that explanation for her own lower rate of uptake. Indirectly, the five mixed uptake students who described an effort to improve their recordings but a frustrated lack of success may have been limited by anxiety and negative feelings derived from lack of success as well.

Attitudes about the CF and level of engagement with it (Storch & Wigglesworth, 2010; Swain & Lapkin, 2002) also play a role here as well. Students in the high uptake group reported a rather thorough engagement with the feedback and a strong appreciation for the value of the assignment, which was in sharp contrast to the low uptake group. Whereas high uptake students embraced and went beyond the CF, low uptake students either rejected, disputed or disregarded the CF they were given. Interestingly, in many cases it was the teacher's perception that these low uptake students who rejected the teacher's feedback tended to have strong English abilities. As Conrad and Goldstein (1999) point out, if a student does not have trust in the instructor, that student may be more likely to reject the feedback. Stronger English abilities and more time spent learning and studying English may have led these students to have more faith in their own self-assessment than in that of a stranger. Motivation, therefore, seem to be strong in students from all three categories, and does not seem to be as strongly correlated with uptake as researchers such as Dekeyser (1993) have suggested in previous studies.

Although also not directly apparent in the interviews, developmental readiness (Ammar & Spada, 2006; Mackey & Philp, 1998) may have also played a role. We might surmise from the evidence that the mixed uptake students who struggled to incorporate feedback despite their strategies and efforts may simply have not been ready to incorporate this feedback. One student who mentioned avoiding errors as a strategies did so because she found it too "difficult" to incorporate them, which may, as previously mentioned, have been a sign of lack of developmental readiness as well. Hyland (1998) mentioned this intentional avoidance strategy in her qualitative study as well.

Given that this study discussed in this chapter is based on a real classroom situation, several practical barriers to uptake appeared in the interview data that are important to consider but not often addressed in research. More experimental studies are less likely to reveal the practical concerns that teachers need to address, in particular lack of access to CF

and misunderstanding of assignment goals. Students who lose their feedback or failed to grasp the task given them may well be excluded from other studies, but here serve the purpose of reminding us of how essential these factors are in successful classwork. Another practical point often overlooked is that underlying various reasons for lower rates of uptake may simply be a lack of time to devote to the assignment. This echoes Conrad and Goldstein's (1999) finding that the pressures of outside commitments can lead to less effective revisions.

CONCLUSION

Given the findings above, an heuristic device (see Figure 2) for teachers who wish to give similar assignments might be proposed detailing four key obstacles to uptake that must be overcome or addressed in order to facilitate maximum benefits from CF. Four questions that teachers can ask themselves to address these obstacles and suggestions for doing so are given below.

1. *Do students have access to feedback?* While students themselves clearly have responsibility for retaining the feedback given them, there are still strategies teachers can use to ensure feedback is readily available when needed. One factor to consider on this point is the means of transmitting feedback. Interestingly, while most of the feedback was given electronically, the one student who reported not seeing his feedback was given his feedback on paper (his recording was submitted on CD), indicating that this difference may have been a factor. Certainly increased consistency in the means of transmission would be advisable, but digital feedback also affords the luxury of a backup copy to help alleviate the problem of loss as well. Since much feedback was going through email and emails can easily be deleted or lost, another suggestion would be to streamline feedback on an audio hosting site such as Soundcloud or a learning management system. This could allow for students to submit assignments and receive feedback which would keep the assignments and feedback more neatly collected in a single tool dedicated to classroom needs. Alternatively, simply alerting students to the need to keep feedback early on in the semester and repeatedly when feedback is given could direct students' attention to the importance of the feedback itself and prevent issues with loss as well.
2. *Do students understand the feedback?* While students also bear some responsibility for understanding the feedback they receive, the onus in this case is arguably more on the instructors. Thus, teachers need to take great care with the feedback they give to increase clarity and limit ambiguity, and numerous lessons can be derived from the data in this circumstance. In the case of the student who did not understand the convention of capitalizing letters to indicate stress, the teacher could have certainly done more to make her shorthand clearer. One option would be, for example, to supply a key to students with typical types of feedback and codes or shorthand to indicate when feedback is corrective and when it is not. Another option would be to supply examples of CF in class and have students discuss appropriate responses to the errors.

3. *Do students understand the assignment goals?* Assignment goals must also be clearly communicated to students particularly to avoid cases where students are creating a whole new recording rather than improving on the original recording. While students' desire for creativity, challenge and self-direction are important and should by no means be ignored, they may not fit into an assignment such as this. If an instructor wishes to have students do a revision recording, much like a revised composition, it could be helpful to convey that expectation very clearly. On the other hand, the interviews here also show evidence that altering the goals and expectations of such an assignment may give students more of a feeling of ownership over their work and thus provide more engagement, which has been shown to be desirable as well (Storch & Wigglesworth, 2010). Pushing them to follow advice that they disagree with or which conflicts with their beliefs about their own skills or about language learning in general may actually cause students to disengage, in which case this would have the opposite of the desired effect. Perhaps a more open negotiation with students about the goals of the assignment would lead to both more engagement and a better understanding of goals.
4. *Do students have sufficient support in achieving those goals?* Finally, providing effective and sufficient support for students in achieving the goals of the assignment may help overcome several obstacles that appeared in the students interviews. In particular, the students who made an effort to correct their mistakes but were not successful in that endeavor could benefit from explicit instruction on strategies for correcting mistakes. The instructor could, for example, walk students through the process and have them practice in class. Class time to work on revisions could additionally prevent problems from outside time commitments or lack of access to resources. If time allows, the instructor can also meet with students individually to explain feedback and guide students toward more effective corrections. Another possibility could be to pair students together so that they support each other through peer reviews and suggestions for improvement. This could simulate the process by which high uptake students improved their re-recordings through input from friends.

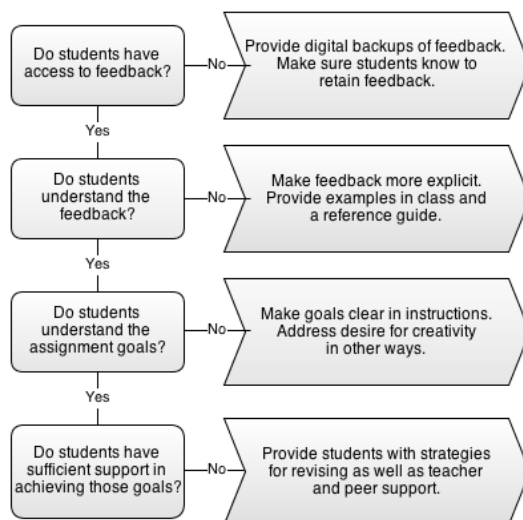


Figure 2. Suggested strategies for increasing uptake.

While it is important to keep in mind that uptake may not lead to learning goals as effectively as teachers tend to believe (Truscott & Hsu, 2008), this paper can still shed light on the internal processes of students as they respond to feedback and improve their productive abilities. For teachers who make the assumption that uptake is a worthwhile goal for the classroom, the insights and suggestions given here can serve to improve instruction. In particular, teachers can gain guidance for strategies for more effectively incorporating audio recordings into coursework and for providing corrective feedback on such recordings.

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Chapter 42

WRITING AND REVISION WITH CODED AND UNCODED FEEDBACK

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ABSTRACT

Corrective feedback has been the focus of debates for the past two decades. Researchers have been dealing with questions of its place in second language writing, its effectiveness, and if it helps (or harms) at all. The results of this previous research have led to the creation of terms for the classification of feedback, such as “direct/indirect,” “focused/ comprehensive,” and “coded/uncoded.” The study discussed in this chapter, which took place in an EFL environment in an English Language Teaching department, investigates the relative effectiveness of coded versus uncoded feedback by comparing two drafts of an assignment. The results indicate that the coded feedback is slightly more effective, but this may be due to discrepancies in the frequency with which each type of feedback was given. While no solid conclusions can be drawn, the chapter implicates that for revision purposes, both coded and uncoded feedback are far more effective for improving accuracy than leaving students to their own devices.

INTRODUCTION

In classrooms, offices and homes all over the world, there are teachers at this very moment giving corrective feedback. They are marking exams, recasting student responses in lessons, and commenting on assignments. While it might not be explicitly laid out in contracts, it is safe to assume that most teachers consider giving corrective feedback an integral part of their jobs: the student makes errors and then learns from those errors, a process fostered by the teacher’s involvement in making the existence of the error known to

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the student. It is also generally understood that students desire feedback from their instructors as part of their learning process.

The past few decades of educational research have called this process into question, at least in the realm of grammar correction. Though for years many have assumed it to be an implicit part of a teacher's job, the past few decades have seen a strong debate as to its place in the classroom.

Two of the problems with error correction, as noted by Truscott (1999) are the potential inability for a teacher to find (and correctly identify) each type and each instance of an error in a student assignment along with the time involved in circling, underlining, crossing out and changing these errors. In a real classroom setting, even the most conscientious of teachers will find, especially upon seeing the second draft of an assignment, that mistakes in the first draft had gone unrectified.

BACKGROUND LITERATURE

The debate regarding corrective grammar feedback gained momentum in 1996 when Truscott published his call for the abandonment of the practice, calling it unhelpful at best and harmful at worst. Since then, a number of studies on both sides of the issue have been published, attempting to confirm or debunk Truscott's thesis by testing various aspects of corrective feedback.

The majority of the responses (Bruton, 2009; Ferris, 1999; Lee, 1997; Van Beuningen, De Jong & Kuiken, 2012) have been in favor of continuing the practice of giving corrective feedback, though most have agreed that the specifics of the most effective types of feedback and manner(s) in which to deliver it is in need of further research. The argument has also been made that, at the very least, students themselves are in favor of the continuation of written corrective feedback. Citing a number of studies (e.g., Ferris, 1995; Ferris et al., 2000; Hedgcock & Lefkowitz, 1994; Komura, 1999; Leki, 1991; Roberts, 1999), Ferris and Roberts (2001) state that research results "have consistently reported that L2 student writers want, expect, and value teacher feedback on their written errors. In several of these studies, students have also indicated that they prefer indirect feedback with error codes or labels attached over either direct teacher correction or errors being simply marked but not labeled (Ferris et al., 2000; Komura, 1999; Leki, 1991; Rennie, 2000)" (p. 166).

Most of the literature categorizes corrective feedback into two general types, "direct" corrective feedback and "indirect" corrective feedback. Ferris and Roberts (2001) define direct feedback as "when the teacher provides the correct form for the student writer; if the student revises the text, s/he needs only to transcribe the correction into the final version" (p. 163). Bitchener expands on this in his 2008 article, adding "the crossing out of an unnecessary word/phrase/morpheme, the insertion of a missing word/phrase/morpheme, or the provision of the correct form or structure" (p. 105) to the definition. In contrast, indirect feedback, "occurs when the teacher indicates in some way that an error exists but does not provide the correction, thus letting the writer know that there is a problem but leaving it to the student to solve it" (Ferris & Roberts, 2001, p.163-4). This may include the simple underlining, tallying, or coding of errors (Bitchener, 2008; Ferris & Roberts, 2001; Robb, Ross, & Shortreed, 1986).

Other terms in previous literature have also been used to describe and differentiate types of feedback. Lee (1997) uses the terms “overt correction” and “error feedback,” which roughly correspond to direct and indirect error correction, respectively. In a 2005 article, Bitchener, Young and Cameron outline the differences between “coded” and “uncoded” feedback, the former indicating both the place and the type of error (but not the explicit correct form), and the latter indicating the general vicinity in which an error has occurred but not the type or exact nature.

The merits of “focused” and “comprehensive” feedback are also being debated. Focused corrective feedback is when the instructor provides feedback on only a single or a small group of features previously selected as targets, e.g., articles (Bitchener, 2008; Sheen, 2007). Comprehensive feedback, therefore, is when the instructor provides feedback on errors regardless of type. Sheen et al. (2009) noticed greater improvements in the focused feedback group than the comprehensive group (though they noted that the unsystematic nature in which the comprehensive feedback was given may have influenced the results). Van Beuningen et al. (2012) point out that comprehensive feedback is the style that most teachers actually practice in the classroom because the goal is to make overall improvements, rather than improving a few select features.

Another important issue related to written corrective feedback is whether the students are aware of their errors in the first place. Researchers in the field of second language acquisition have referred to this awareness as “noticing,” and it has been claimed that learning cannot occur without noticing (Schmidt, 1990). For example, Lee (1997) created a study testing students’ knowledge in grammar correction, finding that most participants in the study had the requisite understanding to correct errors but lacked the perception to find them in their own work; it is also worth noting that the participants in this study had relatively low metalinguistic knowledge and had difficulty assigning terms to describe error type. For this reason, researchers have speculated that teachers’ feedback draws the students’ attention to these errors, which then allows the students the opportunity to refine their interlanguage (Ellis, 1998). Furthermore, because teachers occupy a position of authority, their feedback may add extra weight to the noticing process. Ferris notes that, “Students are likely to attend to and appreciate feedback on their errors, and this may motivate them both to make corrections and to work harder on improving their writing. The lack of such feedback may lead to anxiety or resentment, which could decrease motivation and lower confidence in their teachers” (2004, p. 51). It is worth noting that SLA research has indicated that direct feedback, in the form of recasting, resulted in the least amount of learner uptake (Lyster & Ranta, 1997).

Various studies have revealed conflicting results as to which form of feedback is most effective, though again, most show positive results for corrective feedback in general. Some researchers hypothesize that indirect corrective feedback can lead to more permanent learning because it pushes the students to actively engage in the correction process (e.g., Ferris, 1995; Lalande, 1982). Ferris’s 2001 study indicates that, with or without codes, students who receive corrective feedback outperform those who do not. Both experimental groups, whose work was given either coded or uncoded indirect feedback, were able to accurately fix a substantially higher number of errors than the control group. Chandler (2003) found that error correction improved accuracy significantly more over time than sheer, uncorrected writing practice did. She also found that although students preferred coded indirect feedback (“Underline and describe”), they performed better with direct feedback (“Correct”) and

uncoded indirect feedback (“Underline”). While this reaffirms Ferris’s interpretation of Truscott that student do not always know what’s best for them (Ferris, 2004), it weakens the argument that error correction is harmful.

Adding to the lack of consensus amongst researchers is the lack of connection between the worlds of research and classroom application. In Bruton’s 2009 review article criticizing Truscott’s stance in the debate about corrective feedback, he also picked apart several recently published studies that provide evidence contradicting Truscott. One of Bruton’s main issues is the nature of the assignments used in the studies. As a proponent of process writing, which he describes as, “Purposeful writing with language errors corrected at an editing stage, followed by rewriting – some pre-writing focus optional” (p. 610), he found the writing assignments used in these studies to “not have clear writing purposes or goals, and there is no reference to the students knowing why they are writing. There is no expected assessment either, and of course no criteria, except implicit correctness” (p. 608). Though this type of assignment may be useful for research purposes, he questions whether the non-communicative nature and lack of “ecological credibility” (p. 611) make them worthwhile.

METHODOLOGY

The study for this chapter took place in a university preparation year academic writing course. The researcher is the instructor of this course, and the participants are students in this course. It is an EFL environment, and the medium of instruction is English. In total, the class consists of 31 students (twenty-seven females and four males) representing five European and Asian countries, none of which are primarily English-speaking nations. 90% of the students in the course had had prior formal English education.

Along with the writing course, the students were also enrolled in intensive grammar, speaking, listening/phonetics, reading, and media classes. All teachers used English as the means of instruction. The students were in class for approximately 24 hours per week, of which four were dedicated to their writing course. Coupled with the prior language instruction that most students had received, participants in this study had had extensive exposure to and practice with metalinguistic terminology in comparison to the sample populations of previous studies (e.g., Lee, 1997).

Furthermore, these students are members of an English language teaching department. Unlike students learning English as a graduation requirement or for work purposes in non-teaching sectors, these particular students, upon graduation, are going to be tasked with teaching the very language they are involved in learning. In their hands will be the duty of educating others in a foreign language. In a few short years they are going to be the error-correctors and the feedback-givers for the next generation. In their courses they are not only receiving language instruction, but they are witnessing and experiencing models of teaching that many of them will go on to use in their own classrooms. For these students, these classes are more than just language classes: they are a kind of vocational training. This population is therefore quite different from the participants in most other error feedback studies to date (e.g., Bitchener, 2008; Lee, 1997; Van Beuningen et al., 2012).

These students have all graduated from high school, passed a national standardized university placement exam, and accepted appointments into the four-year ELT degree

program at this university. However, the department administered its own placement exam before the beginning of the first term, consisting of four skill exams (reading, writing, listening and speaking) and one grammar exam. Based on the overall combined results of this exam, the students were separated into two groups of approximately equal size. The students in the first group, who had a global score of over 60%, were allowed to immediately begin their first-year coursework. The students in the second group, whose grammar scores ranged from 4.5% to 15.5% and whose writing scores ranged from 0% to 14% of their overall exam grades, were placed into the ELT department's preparation class for an additional year of pre-first-year language instruction. It is important to note this because although there was no explicit pre-test for the current study, the students' skill level had already been tested as a part of their being in this course in the first place and found to be in need of additional practice for both form and content reasons.

The sample for the study includes 36 first and second drafts from 18 students. Though all students were required to complete the assignment, a number of the assignments were eliminated from the sample population for several reasons. Some students were found to have plagiarized on either their first or second draft, rendering their assignments inadmissible to this study (because what is the point of studying errors that the students didn't actually make themselves?). Other few students neglected to resubmit their original drafts. For ethical purposes, the use of a control group was not considered, though the researcher acknowledges the empirical problems involved.

The material for the study was collected in the middle of the second term of a two-term course. All the students had been enrolled in the course from the beginning and were familiar with the researcher's instruction and feedback style. In class, they had produced timed writing pieces, worked on collective-learning tasks, and completed several peer-review workshops. Prior to this particular assignment, the students had submitted a number of assignments on various topics. The assignments differed in length (earlier assignments consisting of a single paragraph and later assignments getting progressively longer) as well as in style – some assignments were descriptive or narrative (and did not require much analysis from the students), while others, particularly later assignments, were opinion or persuasive essays and needed more significant explanation and justification. The assignment for this study asked the students to choose an example of a story about a popular local folktale character. They were then to re-tell and analyze their chosen story, looking at the conflict, solution and lesson. This was given as an at-home assignment and due five days later.

The assignments were corrected in the same fashion as all other assignments since the beginning of the course the previous fall. As with the previous assignments, the feedback was unfocused and comprehensive, including issues of content, paragraph structure, grammar, spelling and punctuation. For the purposes of this study, feedback was categorized as either "coded" or "uncoded". These terms are based off of Bitchener's definition (2005), but altered in a few ways. In this chapter, "coded" feedback is a mixture of features of direct and indirect feedback whereas "uncoded" is purely indirect. The main distinction between "coded" and "uncoded" feedback as they are used in this chapter is that "coded" feedback guides the student towards a specific type of correction, whereas "uncoded" feedback requires the student to identify the exact location, type, and correct version of the error. Included in "coded" error corrections are instances where the specific type of error (e.g., word choice, tense, spelling, preposition, conjugation) was explicitly given; instances where an unnecessary word was crossed out (e.g., "they came ~~by~~ running"); and instances where a

specific missing word was indicated (mostly articles and prepositions). “Uncoded” error corrections include instances where the fact that an error had occurred was indicated by circling or underlining the general area in which the error occurred, but the exact nature of the error was not stated (e.g., in the clause, “The problem didn’t solve,” the incorrect usage of passive voice was circled but no explanation was given). The two types of feedback were given randomly to all students; as this is descriptive research, there was no manipulation of the total instances of either type of feedback. Therefore, it happened that “coded” feedback was used significantly more frequently than “uncoded” feedback.

Feedback was not limited to grammatical and lexical errors; comments regarding content and structure were given on each assignment. Most students were requested to re-evaluate or further explain their analyses of the story’s message. However, for the purpose of this current chapter, only the instances of grammatical and lexical feedback are included for measurement.

The students were asked to re-write the assignment, again with a five-day period in which to complete their revisions, and submit both the original along with the second draft. The two drafts were then compared, and the changes were tallied and classified. A variety of revision phenomena were identified and categorized using the following terms. “Successful Uncoded Corrections” refer to instances where the student made the appropriate change to an uncoded error correction (e.g., the alteration of “The problem didn’t solve,” into “The problem couldn’t be solved.”). “Successful Coded Corrections” refer to the student having made the appropriate change to a coded error correction (e.g., the insertion of “at” in the clause, “Look at these brutal people,” in the second draft in response to the code “prep”). “Unsuccessful Uncoded Corrections” are instances where the student either made a change to the original, but not the necessary one (e.g., the student changed “...without pay any money,” in which “pay” was circled, into “...without give any money.”), or where the student ignored the feedback. “Unsuccessful Coded Corrections” refer to the student having either made the correct type of change, but in doing so made a new mistake of the same type (e.g., insertion of the incorrect preposition in response to the code “prep”), or the student ignored the feedback. A “New Error” is an error that only appears in the second draft. In some cases, the student incorrectly wrote something that had been done correctly in the first draft. In other cases, the student added new content to the second draft that contained one or more errors. An “Uncorrected Original Error” is a grammatical or lexical mistake that the instructor neglected to indicate on the first draft and which was then carried over into the second draft. Finally, a “Self-Identified Correction” refers to an instance where the student rectified an error that had not been indicated by the instructor.

RESULTS

Of the eighteen sample first drafts examined, a total of 32 uncoded and 51 coded instructor error corrections were identified. In the revisions, a total of 19 successful uncoded corrections, 37 successful coded corrections, 13 unsuccessful uncoded corrections, 12 unsuccessful coded corrections, 40 new errors, 32 uncorrected original errors, and 4 self-identified corrections were identified.

Table 1. The total number and average frequencies of different types of errors in Draft 1

Draft 1 Errors	Actual Instances	Frequency	%
Coded	51	2.83	44.34
Uncoded	32	1.8	27.83
Uncorrected Original Error	32	1.8	27.83
Total	115	6.39	100

In the second drafts, on average, each student made 3.33 successful corrections out of an original average of 6.39 errors per draft. This is just over half of the total errors per draft including the ones missed by the instructor. The students were able to successfully correct uncoded error feedback 61.1% of the time. They accurately made 72.5% of the coded error feedback corrections.

For the second drafts, students revised both the form and content of their first draft. Most of the second drafts included significant amounts of new material that had not been previously corrected. This resulted in a high occurrence of new errors (40 in total, or an average of 2.2 new errors per draft).

Table 2. The total number and average frequencies of different types of corrections in Draft 2

Draft 2 Corrections	Actual Instances	Frequencies	%
Successful uncoded corrections	19	1.06	31.67
Successful coded corrections	37	2.06	61.67
Self-identified corrections	4	0.22	0.06
Total	60	3.33	100

Table 3. The total number and average frequencies of different types of errors in Draft 2

Draft 2 Errors	Actual Instances	Frequencies	%
Unsuccessful uncoded corrections	13	0.72	13.40
Unsuccessful coded corrections	12	0.67	12.37
Uncorrected original errors	32	1.78	32.99
New errors	40	2.22	41.24
Total	97	5.39	100

In addition to the errors in the new content, many errors from the first draft that had been missed by the instructor were transferred intact to the second draft. Out of 32 errors that were overlooked by the instructor, only 12.5%, or 4 total errors, were changed by the student with no teacher feedback. Of these 4 errors, one was a repetition of an error that was corrected elsewhere in the first draft (unnecessary insertion of the preposition “of”). The other three did not seem to share any stylistic or categorical characteristics.

PEDAGOGICAL IMPLICATIONS

The results of the study discussed in this chapter imply that coded feedback, either by directly making the necessary change or by identifying the nature of the error, leads to a higher rate of successful second draft corrections. They do not imply, however, that uncoded feedback is ineffective. Both types of feedback had over 60% success rates.

Researchers have speculated on the benefits and drawbacks of both types of feedback. Feedback that is more implicit like the uncoded feedback in this chapter may push students forward in their interlanguage development because they make conscientious decisions about each change (e.g., Ferris, 2004; Lyster & Ranta, 1997; Schmidt, 1990); conversely, the delay in confirmation as to whether their changes were accurate may cause uncertainty and thus limit how much they retain from the process (e.g., as reported in Van Beuningen et al, 2012). Regarding feedback that is more explicit like the coded feedback in this chapter, while it guides the student to make the correct change the first time around (e.g., Chandler, 2003), it is much more passive, requiring less mental input and therefore less engaging (e.g., Ferris, 2004). From the side of the instructor, coded feedback also requires more time and effort to accurately identify and name the type of error that is to be corrected.

From a philosophical point of view, I think that in many cases implicit feedback, like the uncoded feedback in this chapter, is best. Particularly, in cases where an instructor is dealing with students who have a history of language education and a familiarity with the rules of the language, uncoded feedback will both challenge the students to use the knowledge they have previously studied while also cutting down on teacher exhaustion. More direct or coded feedback may be best for those students who are just beginning, or who are less familiar with the rules and structures of the language. Second language acquisition research also gives us reason to believe that uncoded feedback leads to more permanent long-term learning (e.g., Ellis, 1998; Lyster & Ranta, 1997). Though this kind of feedback may result in fewer accurate corrections in the short-term, it is reasonable to extrapolate that several repetitions of the noticing process may ultimately result in more permanent student uptake. Although the results for the study discussed in this chapter show a success rate for uncoded feedback that is 12% lower than for the coded feedback, there were also significantly fewer instances of uncoded feedback (38.6% less). This lower frequency of occurrence may account for the slightly lower success rate.

Regardless, the low frequency of students noticing and correcting their own errors indicates that written corrective feedback of any kind is important for the students' learning process. Though one could argue that this shows the ineffectiveness of corrective feedback, as the students were mostly unable to either diagnose their errors on their own by comparing uncorrected work to the teacher's feedback or apply this feedback to their new content, the high response rate to the uncoded feedback shows that some learning is taking place. The major difference seems to be whether the students have attended to the error or not. Considering that revision is a cornerstone of any kind of academic writing, regardless of language background, the effectiveness of corrective feedback in this revision process is clear.

LIMITATIONS AND FURTHER RESEARCH

There are a number of limitations to the study discussed in this chapter. First and foremost is the sample size. A study involving such a small group of participants can only really be used for indicative purposes rather than for drawing clear conclusions.

Secondly are the issues arising from at-home assignments. There is no way to measure the amount of time the students spend on an assignment completed outside of the confines of the classroom. Different students may have spent greater or lesser amounts of time on the assignment and attended more or less closely to the feedback while writing. Beyond this is the issue of plagiarism. Outside of a controlled environment it is impossible to ensure 100% that no copying has taken place. The students in this particular course had received explicit instruction on what constitutes plagiarism as well as the consequences should any instances of plagiarism be discovered. However, even in the second semester, some students were found to have plagiarized on one or more assignments. Though a teacher who is familiar with an individual student's writing may be able to identify plagiarism most of the time, there is still a chance that some will go unnoticed. Students may also have received help from other sources like friends, siblings or private tutors. While this in and of itself is not necessarily problematic, it limits the certainty with which we can ascribe any improvements to corrective feedback alone.

Thirdly, the design of this study discussed in this chapter lacked a control group. Without a control group to compare with, the results cannot be considered conclusive. The ethical implications of using a control group, particularly in a situation where the students' academic futures are directly affected by the course in which the study was done, were the main reason for foregoing the idea. Additionally, as the numbers in this group were already so small, it is doubtful that the inclusion of a control group would have allowed for any more solid conclusions to be drawn. Future studies regarding the use of different kinds of corrective feedback will need to balance the issues of ethics and sample size when including a control group. It may be worthwhile to consider doing studies in a class setting where writing is one component of the course but not the main focus (see Van Beuningen et al, 2012) so as to serve both experimental purposes as well as the students' best interests regarding the giving or withholding of error feedback.

Again with regard to design is the lack of control for the frequency of each type of feedback. In order to more clearly demonstrate a significant difference between the two types of feedback, measures should be taken to ensure that the instances of each type of feedback occur more uniformly throughout the process of future studies¹.

CONCLUSION

Despite the years of language instruction that most of these students had received, their productive skills were relatively intermediate. Many of these students felt they had a full knowledge of English grammar, but most of them were unable to consistently and accurately apply this knowledge to writing of their own production.

The results of the study discussed in this chapter indicate that students are largely unaware of the errors in their own writing. Corrective feedback from the instructor appears to

be, by far, the most effective way of drawing their attention to form-related errors in their writing for revision purposes.

However, the high occurrence of new errors in the second drafts indicates that, despite feedback, students still may not be internalizing and applying the information that the feedback is meant to convey.

While corrective feedback clearly helps students to improve on work they have already done, its long-term effects still appear questionable. The study in this chapter is too small and too limited in time to draw solid conclusions, but it does help add to the current body of research regarding corrective feedback. The chapter is unique in that it not only takes place in an EFL environment, but the subjects of the study are training to become English teachers themselves. The study deals with the realities of a classroom situation. It is small-scale, and the process should both be repeated as well as compared to a larger sample of work over a longer period of time so as to draw more certain conclusions on the effects of corrective feedback on new writing.

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Chapter 43

LIVING IN A MULTILINGUAL WORLD: LATEST TRENDS IN LANGUAGE LEARNING VIA A WIDE ARRAY OF EDUCATIONAL TECHNOLOGY TOOLS

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ABSTRACT

It has been estimated that some 60% of today's world population is multilingual. Living in a multilingual world makes language learning essential and the foreign language teaching profession even more valued to guarantee communication in a wide spectrum of languages, thus promoting mobility around the world and ensuring the continuity of the translation industry. The emergence of a dizzying array of digital technology tools together with the advent of web-enhanced language learning and CALL are useful to assist during the language learning process, however, the use of technology as a mere replacement of more traditional ways of instruction does not work. The incorporation of the omnipresent Web.2.0 and its mobile, distance, blended and flipped learning opportunities can provide students with a wide variety of authentic resources for the development of both communicative and structural skills inviting them to collaborate and to develop language awareness and learning competences in the process. From the teaching perspective, it is imperative to take some time to reflect on the suitability of educational tools and the implementation of new pedagogies such as constructivism that support the integration of educational technologies in the curriculum without overlooking the importance of maintaining its social and cross-cultural dimension, with a view to encourage autonomy, and increase exposure to the target language and culture.

This chapter presents illustrations of the latest trends and practices in language learning, demonstrating that technology-enhanced language learning enables innovative foreign language delivery and empowers learners to acquire the chosen language in a more independent yet effective way.

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1. LIVING IN A MULTILINGUAL WORLD

It has been estimated that some 60% of today's world population is multilingual. Since multilingual speakers outnumber monolingual speakers in the world's population, multilingualism is becoming a social phenomenon governed by the needs of globalization and cultural exchange.

With the Internet facilitating access to information in multiple languages, the need to acquire languages is guaranteed and so is the future of the language teaching profession. There are over 7,000 languages spoken in the world today. Amongst the benefits of multilingualism are increasing cognitive skills such as problem-solving, creativity and memory, appreciating cultural references and nuances that are sometimes lost in translation, and broadening employment opportunities. Employers also value language skills for their potential to open up new markets and the ability to communicate with customers.

Multilingualism and cultural diversity also promote transnational mobility in the form of language exchange programs or employment migration. A multicultural society as a result makes people want to communicate with each other to understand differences in values, which may otherwise cause conflict, and to share perspectives.

In such a multilingual and multicultural diverse world the role of translation and interpreting is key to overcome communication problems and to ensure the maintenance and development of linguistic diversity.

2. PEDAGOGIES THAT UNDERPIN THE INTEGRATION OF THE LATEST EDUCATIONAL TECHNOLOGIES: WEB 2.0, TELL AND CALL

When thinking about the insertion of new technologies applied to language learning and teaching inevitably we think about the benefits of CALL and also about the resistance from many language tutors who still think that technology will eventually replace them.

The various many ways to teach languages with the aid of technology take nowadays names such as CALL (Computer-Assisted Language Learning) or TELL (Technology Enhanced Language Learning). These are not meant to pose a threat to the language profession but rather complement what can be done in class.

The benefits of TELL include providing opportunities for meaningful interaction in which technology-related tasks approximate more and more real-world conditions for conversation and communication (Egbert and Hanson-Smith, 2007; Sanders, 2005). These principles underpin a successful integration of technology into the foreign language curriculum. According to Blake (2013:109), aspects such as theory-driven applications of new technologies, student-centered classrooms and the pursuit of a third place in the quest for bilingualism and the development of intercultural communicative competence should somehow be present in the pedagogical framework in order to design effective materials.

Walker and White (2013) see a move from CALL to TELL. According to them, one of the main differences between CALL and TELL is that they see technology not as assisting language learning but as part of the environment in which language exists and is used. TELL in this sense includes a wider range of devices than “computer” such as mobile phones, game consoles and tablets. This change in the technology means goes in parallel to the various stages of CALL as pointed out by Kern and Warschauer (2000). Their model differentiated between structural CALL, based on a view of language as a formal system of structures and focused on drill and practice methods to achieve accuracy (Castagnaro 2006). The pedagogies behind this first stage approach are grammar-translation and the audio-lingual method. The second phase would be communicative CALL with a dominant communicative language teaching methodology. In the third phase of Warschauer’s model we witness an ‘integrative’ CALL with multimedia and the Internet underpinning our everyday life and teaching. The teaching pedagogy that supports this phase would be content-based with a socio-cognitive view of the language which is developed via social and meaningful authentic interaction leaving behind the formal structural and cognitive systems that dominated the structural and communicative CALL stages.

TELL is more concerned about communication and interaction and supports these three views of language, i.e., structural, cognitive and socio-cognitive. The principal objective then is encouraging autonomous learning, not only accuracy or fluency. The theory behind this view of learning in TELL would be connectivism (Siemens 2005), which is described as ‘a learning theory for the digital age’. Siemens argues that learning occurs through engagement with a diversity of ideas and opinions.

In TELL we can picture the Internet as a vast repository of knowledge and information. In this sense, knowledge exists in the world and can be accessed through participating and collaborating in various group activities. This means a big leap from behaviourism and the belief that a system of repetition and positive feedback could foster correct performance. Constructivism encourages to act upon the environment to acquire and test new knowledge, and social constructivism focuses on learning taking place as a result of the learner’s interactions in a group. In this sense, the role of computers and technology in language learning has changed over time, although some old approaches such as the use of translation or drill practices are still used successfully in TELL applications and mobile devices. The latest trends are linked to CMC (Computer Mediated Communication). CMC goes hand in hand with Web.2.0, a term commonly used to refer to websites that consist of various user contributions in the form of video upload sites such as *YouTube*, social networks such as *Face Book*, photo sharing such as *Flicker*, wikis such as *Wikipedia*, blogs, social bookmarking, online slideshows and presentations, etc. In this respect, Web 2.0 represents a change in the use of the Internet from a medium for merely viewing information to the development of various publishing, social networking and collaboration tools, often media rich, enabling group work and supporting reflective learning. Although CMC may not always be accurate and reliable, the benefits are many. Goodwin-Jones (2011) argues that, as teachers, we should help students to become self-directed learners. This involves providing guidance and useful online tools and demonstrating the benefits and drawbacks of these.

As a result of all these new resources available using Web 2.0, new approaches to teaching have arisen. Some of the latest are ‘flipped classroom’ (Tucker 2012) where students receive videos created by the teacher to explain a particular item which then will be practiced in class leaving more time to engage with communicative activities and/or one-to-one

feedback. In this student-centered line ‘dogme’ learning (Meddings and Thornbury 2009) encourages teaching without course books with students creating content and teachers guiding them in their communicative endeavors to appropriate resources for their learning aims.

These two methodologies are particularly useful in blended and distance learning where students are suggested a list of materials to further investigate or practice a particular learning item. As a result, a more personalized and independent learning arises, which no doubt fosters autonomy and problem solving exposing students to authentic and innovative means for a more enriching learning experience.

Last but not least, in this world of constant emerging technologies teachers may need to keep up to date with these and, at the same time, be able to evaluate the endless list of tools and resources in order to filter them according to their particular needs.

What skills do language teachers need to use technology for language teaching purposes? In this regard Hampel and Stickler (2005) proposed a pyramid model of skills as follows: the first two levels would be a basic ICT knowledge as a foundation, building on specifically technical competences to use a particular software application for teaching purposes. The third level would be understanding the possibilities and the constraints the medium offers and the forth level would ensure the creation of online socialization to develop communicative competence. This model assumes that once an online community has been created appropriate learning materials can be designed for a particular group.

3. EXAMPLES OF THE LATEST TRENDS IN THE USE OF EDUCATIONAL TOOLS AND RESOURCES FOR FOREIGN LANGUAGE TEACHING AND LEARNING

In this section we present ideas in line with the latest trends in the use of new pedagogies and educational technologies for language teaching and learning. We will divide them into receptive skills, i.e., reading and listening comprehension, and productive skills, i.e., speaking and writing. These are just some examples of innovative ways of encouraging autonomous and independent language learning by means of diverse web-enhanced resources.

3.1. Receptive Skills: Listening

Understanding spoken language is a challenging L2 skill. It involves various strategies from predicting, inferring, seeking clarification and concentrating on a particular item of meaning. Walker and White (2013) state that students could learn L2 listening skills better if they had the chance to choose what they listened to, control when and how often they listened, make their own listening tasks, link listening and speaking whenever possible, become active listeners and, most importantly, be able to reflect on their comprehension problems. The Internet is full of various authentic resources for listening practice. *YouTube* features L1 and L2 speakers in video clips which contain a vast variety of excerpts from tv shows, tv ads, films, music, language lessons, etc. Students can select what they want to watch, have control of the replay and pause buttons and can toggle the subtitles on and off to their level/convenience. On the Internet there is also a wide range of radio stations and tv

channels, podcasts on various topics, etc. In a more student-centered approach, students can be asked to design their own video listening tasks around topics of their interest. These may include summarizing, comprehension questions or even combine these with a debate/discussion or with a short summary/composition around the topic after watching the video. They could even create their own listening materials using software such as *Audacity*.

3.2. Receptive Skills: Reading

L2 reading involves skills and strategies such as identifying letters, matching sounds to orthography, dealing with unknown words, using knowledge of the world to predict information, using knowledge about the structure and language of a particular genre, etc. The Internet has created new kinds of reading and writing communities reunited by common interests, e.g., *Online Book Club*, for book lovers. In teaching reading tasks can be digitally designed with hyperlink aids to help comprehension, encouraging the learner to do some pre, during and post tasks to get the most of the reading experience, and linking these tasks with a follow-up speaking or writing task. Culture-related texts are good motivators and work very well at all levels. The key factor here is that students choose what they read: e-books, online newspapers, interactive fiction or Internet adapted reading resources for the lower levels. All of these foster autonomy and social collaboration if for example we link reading with editing a text via a wiki.

3.3. Productive Skills: Speaking

L2 speaking is a complex skill, which involves various linguistic and communicative aspects such as accuracy, grammatical and lexical correctness, fluency and using language appropriately around a particular context and purpose.

The Internet and its vast online virtual community offer a wide range of opportunities for practicing a foreign language by interacting with natives and other L2 learners over *Skype*, for example. There are myriads of language classes, language coaching and language exchanges that are currently taking place this way. In these virtual classrooms synchronous pre-prepared conversations with peers can develop conversational skills further over time. The idea of planning and rehearsing in advance seems to be working for any kind of oral L2 interaction. Oral presentations are a good example. The key is that learning has place in a supportive, non-threatening environment. For pronunciation practice teachers may enjoy using voice recognition programs such as *Vokis*, which convert spoken language into written words and can be an original way of providing students with feedback on a particular task. Students may also enjoy creating an avatar and interacting around the virtual scenarios of *Second Life*.

3.4. Productive Skills: Writing

Writing in an L2 involves skills such as knowing the language rules to express ideas around a particular purpose and audience. Other important factors to consider are accuracy, coherence and genre-related structures. Hyland (2009) identified three approaches for the

teaching of L2 writing, i.e., product-based (which involves students in analyzing model texts in search of language examples), process-based (which involves students in brainstorming ideas, drafting texts and editing in collaboration), and writing as social practice (which involves analyzing genres and giving students a sense of the expectations of readers in a particular context).

An example of software tailored for the product writing approach is *Online Writing Labs* (OWLs), which provide a wide range of resources for writers such as tips on getting started, grammar and proofreading advice, etc. For the process approach the possibilities are endless from word processors, dictionaries and concordancers to mind mapping, digital storytelling, web quests and wikis. All of these lend themselves very well to the practice of L2 writing around the various stages of the writing process, e.g., brainstorming, planning, drafting, composing, editing and revising. At the end of the process would be the tutor providing feedback to students who would revise the text and redraft it accordingly. This can be done via screen recording software capturing the tutor's comments, highlights and notes for improvement on video and forwarding it to students.

The social practice approach makes use of social networking sites such as *FaceBook* or *Twitter*. In this regard students can be asked to follow somebody they admire and get involved in the discussions around a subject of their interest, or even suggest a new topic for discussion, given a particular audience and context. This can be an alternative way of blogging and the fact that the length is limited, they have a real audience, and they need to read and check the discussion thread before replying can benefit the students' language skills in many ways.

The idea of collaborative writing and editing around a subject matter can also be practiced via wikis. These are especially relevant for specialist-language courses where students can be asked to construct a text via problem solving for example a clinical case, or writing an article or report from some real data/statistics. Blogs are also a form of contributing more extensively to an area of study or interest the students feel passionate about. With sites such as *Wordpress.com* is very easy for the students to keep a record of their experiences e.g., during a year abroad and these can be easily shared with other peer students via a virtual learning environment as a means to exchange ideas while they are abroad.

The Internet is rich in resources to help students with good models of the language, in particular with examples of genre-related writing, discussion forums to help with grammar and multiple vocabulary tools, including dictionaries and concordancers.

In this trend, students can make the most of the rich online environment to produce e-portfolios. An e-portfolio is a collection of information that demonstrates development or evidence of learning outcomes, skills or competencies. Producing an e-portfolio usually requires the synthesis of ideas, reflection on achievements, self-awareness and forward planning. This has various educational benefits and serves to practice independent language learning of various linguistic skills (not just traditional composition tasks are allowed, but also video and audio recordings) and cultural references.

However, the Internet may also expose students to bad models of language, e.g., non-native incorrect language texts and/or machine-generated translations. Students often make use of the latter, especially as a result of bad time management when they leave the completion of their coursework for the very last minute. This often results in plagiarism by copying and pasting utterances from the web around a particular topic, or translating some ideas into the target language via free online machine translation systems such as *Google*

Translate. Nowadays there are tools such as *Turnitin* to help spot plagiarism, however, these do not pick up all cases of L2 plagiarism. Language tutors nowadays should be widely aware of these practices and teach the students good time management skills and direct them to appropriate online resources to avoid these malpractices.

CONCLUSIONS AND FUTURE GAZING

Having had a look at the way the wide range of digital and online technologies can enhance the L2 learning and teaching experience we should not forget that these technologies are meant to supplement rather than substitute more traditional activities and tasks. As tutors we should always prioritise the needs of our students, the advantages and constraints of the learning context and the main objectives we pursue.

The future of learning technology looks into various possibilities such as the use of mobile apps, tablets, and game-based learning. In all these, CMC and the use of authentic linguistic and cultural materials are common factors which, together with the fact that students can access them 24/7 at their fingertips, allow for audio and video facilities, visual input, interaction and healthy competition without disregarding the fun factor, which, let's not forget, is an excellent motivator as well.

We hope that through this article we have given an indication of how new technologies may impact on language teaching and learning and the variety of resources and activities that these enable. As technology evolves, language learning keep reshaping but the morale of the story is still the same; as teachers we endeavor to keep up-to-date with the latest pedagogical trends and tools in order to provide our students with innovative foreign language teaching whilst empowering them to acquire the language in a more independent yet effective way.

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Chapter 44

PEER-TO-PEER FOREIGN LANGUAGE E-LEARNING STIMULATED BY GAMIFICATION AND VIRALITY

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ABSTRACT

The chapter describes the results of an experiment in building an online platform for learning foreign languages that allows people to teach their native language without being professional instructors. This platform allows audio and video connections between the participants and includes an interface with pre-defined interactive lessons. The content is presented in the form of bilateral scenario cards. Each of the participants (the student and the teacher) follows their own version of the cards in the video chat. For each card presented to the student there is a corresponding card for the teacher containing step-by-step instructions for reading the text out loud or asking the student a question and showing the correct answer. The student can use prompts and translations if s/he does not understand the teacher. The teacher does not have to prepare for the lessons, because the system contains all the necessary teaching materials. This system allows separating the lesson material from the teacher. Thus, the teacher can be any native speaker. The main constituents of content development are: dual language prompts, repetition, comprehension and a dictionary. Four levels are implemented: preschool, beginner, intermediate, and advanced. Four languages are currently supported: English, Spanish, German, and Russian.

In addition to the system description, gamification and viral mechanics are also discussed. Relationships between virality (viral involvement of users) and retention parameters as measurable metrics are calculated and discussed using real examples. Virality and monetization can be both competing and complementary mechanisms for the system growth. The F-growth factor, which combines both virality and retention, is proposed as the metrics of the overall freemium system performance in terms of the user

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base growth. This approach can be tested using a small number of users to assess the system potential performance. If the F-growth factor is less than one, the product needs further development. If the F-growth factor is greater than one, the system retains existing and attracts new users, thus a large scale market launch can be successful.

Keywords: Distance learning, foreign language, peer2peer, learning tools, open educational resources, social network, gamification, virality, retention, viral marketing, e-learning, edutainment, internet, online advertising, crowd funding, K-factor, freemium, free2play

1. INTRODUCTION

Students are interested in being able to speak when learning a foreign language. Studying conversational speech is very important for practical purposes, since language training based only on written language and books is not sufficient. As mentioned by Joseph Vendryes, a person who speaks like he writes leaves an artificial or abnormal impression. Foreign language education in the former Soviet Union was based on reading and text translation, and not on speech. Thus, the students were able to read, understand and translate text, but not communicate with live foreigners. There are multiple textbooks focused on the speech aspects of a foreign language (Kohonen et al. 2001).

The research objective of this study was to create a computer application to teach foreigners to understand fluent speech. Each language consists of the two essential parts. One is the written language, and the other is the spoken language. These two types are quite different from the linguistics perspective.

Spoken language skills can be acquired by watching foreign movies or reading novels. Book writers, cultural, political, education and religious leaders provide spoken speech standards. The rest of the society considers their language as a standard. However, casual conversation is the main spoken language characteristic. The term casual conversation is a psychological category. Casual conversation or speech can not be prepared in advance, since it is used in the informal settings. There are certain attributes of the spoken language:

- 1) The number of participants: one, two, more than three, which is correspondingly called monologue, dialogue, polylogue. Dialogue is the main type of the spoken language conversation. It is characterized by changing the roles of the speaker and the listener, when both participants switch their roles periodically. Polylogue involves more than two participants. Polylogue, opposite to a dialogue, is characterized by the theme polyphony, since each of the participants talks about their business, leading the conversation, so to speak. It should be noted that polyphony can be present in a dialogue as well, as two people engaged in a conversation can jump from one subject to another.
- 2) Conditions of the conversation: contact (private conversation), distant (phone conversation, speaking from one room to another, etc.). During direct conversation participants can also use gestures and facial expressions as additional means of communication.
- 3) The main conversation theme as the basis of spoken communication, which is also called constitution. Wherein the spoken language is the participants' reaction to non-

verbal situation components, or is targeted towards available objects, enhancing the speech ellipticity and the role of pronouns.

- 4) Common non-perceptual base is essential for conversational speech construction. Preliminary information, based on the previous everyday experience, is the common non-perceptual base. For example, in the Lev Tolstoy's novel "Anna Karenina", Kitty and Levin, who are in love, perfectly understand each other and only use the first letters of the words in written correspondence.

The main form of conversational speech is oral; however, not every type of speech is conversational. For example, lectures, public performances, scientific talks, TV interviews and reports are not conversational speech. In general, mass media and public oratory use codified language, while conversational speech belongs to the private sphere of communications. This is personal communication mainly with friends and family. Connection between the conversational speech and the household subjects is proven by the fact that violation of this connection is used in the literature to create a comic effect. One type of situation-determined conversational speech is of particular interest: stereotypical and high-frequency repetitive idioms. Learning these question-response cues, or speech patterns, associated with everyday life, it is one of the important tasks of studying conversational speech. There are two types of high-frequency repetitive idioms: etiquette stereotypes and urban stereotypes. "At the store", "On the bus", "In the theater", "At the movies", etc. are examples of the urban stereotypes. The importance of distinguishing stereotypical and non-stereotypical situations is signified by highlighting them in textbooks intended for people studying a second language.

Elemental conversation is even more extensive and interesting area of the spoken language, not related to typical situations. This live speech, which is all around us, can be called free conversational speech, to distinguish it from the urban stereotypes. Its study has increased significantly in recent years.

Conversational speech standards have more variability than the codified language norms in words formation, nominative means, phonetics, etc. Language is regulated by several standards. One is the nationwide standard, which is used by the whole population.

Additionally, there are more particular forms. Thus, unwritten, but multiple mandatory standards play a special role in conversational speech. However, conversational speech is regulated not only by the standards adopted in a particular language community, but also by the etiquette conventions. Certain expressions cannot be used, as they can be perceived as impolite and violating linguistic etiquette. Thus, spoken language skills can be most effectively learned from live verbal interactions with native speakers. This is accompanied by acquiring skills that reflect conversational partner experience, including lexical and cultural verbal communication traditions in stereotypical and non-stereotypical situations.

An online application was developed for practicing spoken language skills with native speakers, which implements described provisions. It is based on the live video and audio connection between real people, where native speaker acts as a teacher. The system contains all the teaching materials in the form of the theme lessons for developing conversational foreign language skills (Benson, 2011). The main requirement for the native speakers is their ability to read, along with education and cultural competence. This can be achieved with a large number of system users.

Table 1. Newly registered users' distribution by the native language

New users by languages									
Month	01.12 - 31.12	01.01 - 31.01	01.02 - 28.02	01.03 - 31.03	01.04 - 30.04	01.05 - 31.05	01.06 - 30.06	01.07 - 31.07	01.08 - 31.08
Russian language, users	1069	3671	191	94	746	2186	3220	4329	1762
English language, users	178	746	68	25	295	978	4005	5582	2539
German language, users	15	22	3	3	6	22	29	38	14
Spanish language, users	17	43	12	3	79	760	903	1644	372

2. ONLINE FOREIGN LANGUAGES LEARNING AND TEACHING PLATFORM

Experiments were conducted using the users of the i2istudy system that utilized the service at their own will (Osipov et al. 2015a). To conduct the experiments the following advertising was displayed in Facebook social network: “Want to learn foreign languages for free, or teach your native language? Click here.” Almost 40,000 users registered in the system from May through August 2014 as a result of the advertising. Most of the users wanted to learn English, 28,180, another 8,711 users wanted to learn Spanish, 1,028 Russian and 1,791 German. 14,943 users said that their native language is English, 20,673 Russian, 204 German, and 3,843 Spanish. Table 1 shows the newly registered users' distribution by the native language.

The primary research objective was to determine if two people unfamiliar with each other, one acting as a teacher, and the other acting as a student could jointly follow the pre-defined lesson scenario using the step-by-step peer-to-peer system (Benta, Bologna and Dzitic, 2014; Renié and Chanier, 2006; Koa, 2012). All registered users could find other users in the system present online, identified as students or teachers by pressing the corresponding “Learn X language” or “Teach Y language” buttons. This action sent requests to other selected users. Here, the words teacher and student refer to the user roles in the system. Each user can assume both roles as a teacher of the native language and as a student learning a foreign language. The users select the corresponding languages during the registration process, which can be changed later.

The recipient of the teaching or learning request sees the user sending this request, along with the language and selected lesson level. The recipient can either accept or reject the request. If the request is accepted, the interface window opens, where the teacher and the student see and hear each other, and use synchronized teaching materials. During the lesson the users not only see and hear each other, but jointly work with teaching materials divided into small portion (cards). Besides, the student can see prompts and translation in their understandable language. The teacher sees additional instructions, for example to ask the student to repeat words, etc. The lessons are following pre-defined scenarios using face-to-

face communication, realized using the web real-time communication (WebRTC) technology (Osipov, 2014; Osipov et al. 2015a, b, and c). If the “teacher” accepts the “student” invitation and vice versa, a live audio-video session is established. Both users can hear and see each other, along with the synchronized lesson materials. These materials include corresponding individual prompts for the participants in their chosen language. The system also tracks the lesson time for the billing purposes in terms of the game currency or real money (Marks 2012; Válek and Jašíková 2013). At the end of the lesson each participant rates the other party’s corresponding quality of teaching or learning.

As a result of the test, it was established that two unknown people, who met in the developed online interactive system for the first time, could carry on a conversation in a foreign language and effectively help each other. Moreover, part of the users did not speak a common language, and communicated by using system prompts displayed in their respective native language. The average successful connection time was about 12 minutes (189,207 minutes or 3153 man-hours) divided by the 15,842 total successful connections. Any type of connection termination was accounted for, including finishing the lesson, participants terminating the connection within the system, or by simply closing the browser.

Regardless of the fact that the average connection time was not very long, this experiment showed that two unprepared participants, previously unknown to each other, could carry on a conversation for an extended period of time using the developed system. If the lessons duration was not too long, the users could finish them. Moreover, the average connection time continued to increase with the number of active users, reaching over 14 minutes by the end of the experiment in August 2014.

After registration the users were asked to select the role of student or the role of teacher and select a potential partner to start a dialogue, based on the step-by-step instructions. In the system, each phrase is displayed for the student and for the teacher with additional comments. The teacher and the student can see and hear each other in real time. They also see synchronized teaching materials. In addition, there is a chat window, which allows both parties to type instant messages to each other (Kötter, 2001; Kim, 2014; Farr and Riordan, 2014). About 20% of the registered users fully participated in the project (Table 2). The rest were intimidated by the other party, or rejected invitations of the other users to conduct the lessons. Moreover, some of the registered users could not properly configure the hardware (the camera and the microphone) for the live video and audio feed.

Table 2. Newly registered users’ involvement in the learning/teaching process

Month	Involvement								
	01.12 - 31.12	01.01 - 31.01	01.02 - 28.02	01.03 - 31.03	01.04 - 30.04	01.05 - 31.05	01.06 - 30.06	01.07 - 31.07	01.08 - 31.08
Number of just registered users who made a call in period	93	734	61	15	251	1026	2037	2072	722
Percent of just reg. users who made a call in period	7	16	22	12	22	26	25	18	15

Table 3. The most popular lessons for August 2014

Students count	Sessions count	Lesson title	Level
555	1881	i2istudy: Teach your native language!	2
407	1328	Nice to meet you!	2
299	1243	i2istudy: Find Friends All over the World	3
244	904	Hello!	1
208	670	If you get a job	3
195	358	The best day of the year	2
194	502	What time is it?	2
158	485	My family	1
136	402	Describing your city	3
103	185	At the airport	2
88	223	Steak: How to Cook it Yourself	3
88	341	i2istudy: Find Friends All over the World	4
79	205	At the airport	1
63	182	Have you ever...	4
60	86	At a party	2
59	113	Michael Jackson	3
46	114	On the airplane	1
35	69	Clothing store	1
35	72	Computers	2
31	52	At the Supermarket	2

The system currently includes four levels: (1) Preschool; (2) Beginner; (3) Intermediate and (4) Advanced. Each user was given an option to select the foreign language level and the specific lesson theme. The most popular lessons for August 2014 are listed in Table 3. Thus, it is clear that the most popular level was the Beginner (8 lessons), followed by the Preschool (5 lessons), Intermediate (5 lessons), and Advanced (2 lessons).

2.1. Learning and Teaching Principles

The main learning and teaching principles of the i2istudy system are:

- 1) Adults can learn like children (Estes, 2014). This means that the language learning materials were created as a game. Adults, similar to children, can learn faster when information is logically presented in small portions, with increasing level of complexity, and most importantly, with pictures or video (Korkmaz, 2013; Codreanu and Celik, 2013). The aim is to attract people to spend 30-40 minutes at a time playing a computer game using i2istudy. At the same time they are reaching their ultimate goal of learning a foreign language.
- 2) No homework. Predefined learning materials are designed for the student to learn during the lesson, without homework, based on multiple repetitions (Erena and

Henderson, 2011). The system allows better memorizing of new words, including their pronunciation. The student reads and hears the new word from the live native speaker, learning its possible uses. The student can ask the teacher any question during the lesson to better memorize the word and its use in oral speech (Gurkan and Yuksel, 2012).

- 3) No emphasis on grammar. The main task is to learn the spoken language. The lesson is structured to allow the student to learn grammar while communicating with the teacher, like children learn their native language (Estes, 2014).
- 4) All types of cognition. Three types of cognition are engaged: visual memory (pictures and video), auditory memory (direct live communication with the teacher) and motor memory (written tasks using the keyboard to type words in the chat). Typically, individuals are stronger in one type of cognition. Utilizing all types of cognition allows for learning the material more rapidly (Rinaldi, 2014).

To facilitate this process 1) a special *methodological system* was designed, including 2) a *unique interface*, which allows users to understand each other without speaking a common language. The system was developed based on 3) *initial testing* using common people as students and teachers, along with professional foreign language teachers. Based on the numerous tests, 4) *four levels of language learning* were identified, which the user is capable to determine individually without additional testing. Each of these four elements of the process is described further in detail.

2.2. Methodological System Description

Despite the wide variety of different online learning systems, none of them combine live audio and video communication with unique teaching materials. The i2study platform was designed to facilitate the teaching process by native speakers who are not experts in teaching. In other words, while people can speak their native language, they don't know how to teach other people.

Professional foreign language tutors developed two-way cards for the student and the teacher. While communicating using video and audio live feed (Caws, 2013), the student and the teacher follow their own version of the cards. Online interaction between the teacher and the student is facilitated by the interactive materials and prompts, presented in the language that the person understands (Monteiroa, Carrillo and Aguaded, 2010). Cards follow a certain sequence, based on the lesson topic. Imagine a live dialogue between the teacher and the student. What would the teacher ask, and what would be the student's response? The lesson is logically structured this way. It also contains a pre-defined set of instructions for the teacher (Monteiroa, Carrillo and Aguaded, 2010). The teacher should follow these instructions, but not strictly, making the lesson more interesting for the student. However, the lesson should follow the main theme. There is no homework in the system, so the student learns the material during the course of a lesson. This positive learning experience makes them want to come back and learn more (Tal and Yelenevskaya, 2012).

2.2.1. Sequence of Cards

Teaching materials are presented as a sequence of information cards with text and pictures or video. The sequence of cards reflects the whole educational process:

1. Introduction and getting to know each other
2. Introductory questions
3. New material
4. Repetition
5. Oral and written tasks
6. Games, dialogues and quizzes
7. Summarizing the lesson and saying good bye to the student

After the lesson the student takes a multiple choice test based on the newly learned material without the teacher. An example where the teacher speaks English, and the student speaks Spanish is found in Figure 1 that shows an English lesson called “The New 7 Wonders of the World” at the intermediate level, the reading task, card 14 out of 30. Cards represent a logical sequence of the whole lesson, dividing it into small steps, i.e., word, sentence and small text. Based on this step-by-step process, a non-professional teacher is able to conduct a lesson by reading the instructions written on each card in the black font (Figure 1(a)).

2.2.2. Card Description

Each lesson consists of 25-30 cards and lasts about 20-30 minutes. Cards are logically connected, reflecting the theme of the lesson. Each card presents 1-5 sentences, accompanied by an image or video related to the text for its visualization. Both the teacher and the student see the lesson for the first time. The teacher is expected to grasp the card in a matter of seconds and read the task out loud. This is why the text should be short, accurately reflecting the task. In a sense, this is a task for both the teacher and the student, since both see the same card; however, they see their own version (Figure 1).

2.3. Interface Description

2.3.1. Synchronized Teaching Materials

The i2istudy technological platform is based on the two ways of presenting information:

1. Live audio and video connection between the teacher and the student;
2. Synchronized teaching materials displayed to the teacher and the student.

The learning process consists of establishing audio and video connection between the teacher and the student (the process of finding the teacher and the student is outside the scope of this chapter). The teacher and the student are presented with the same card, but it contains customized information. The teacher sees the materials as an aid to the teaching process. The student sees the materials needed for the learning process. The teacher conducts the lesson by switching the cards (grey arrows on the card in Figure 1(a)), which are also switched on the student’s screen (Figure 1(b)).

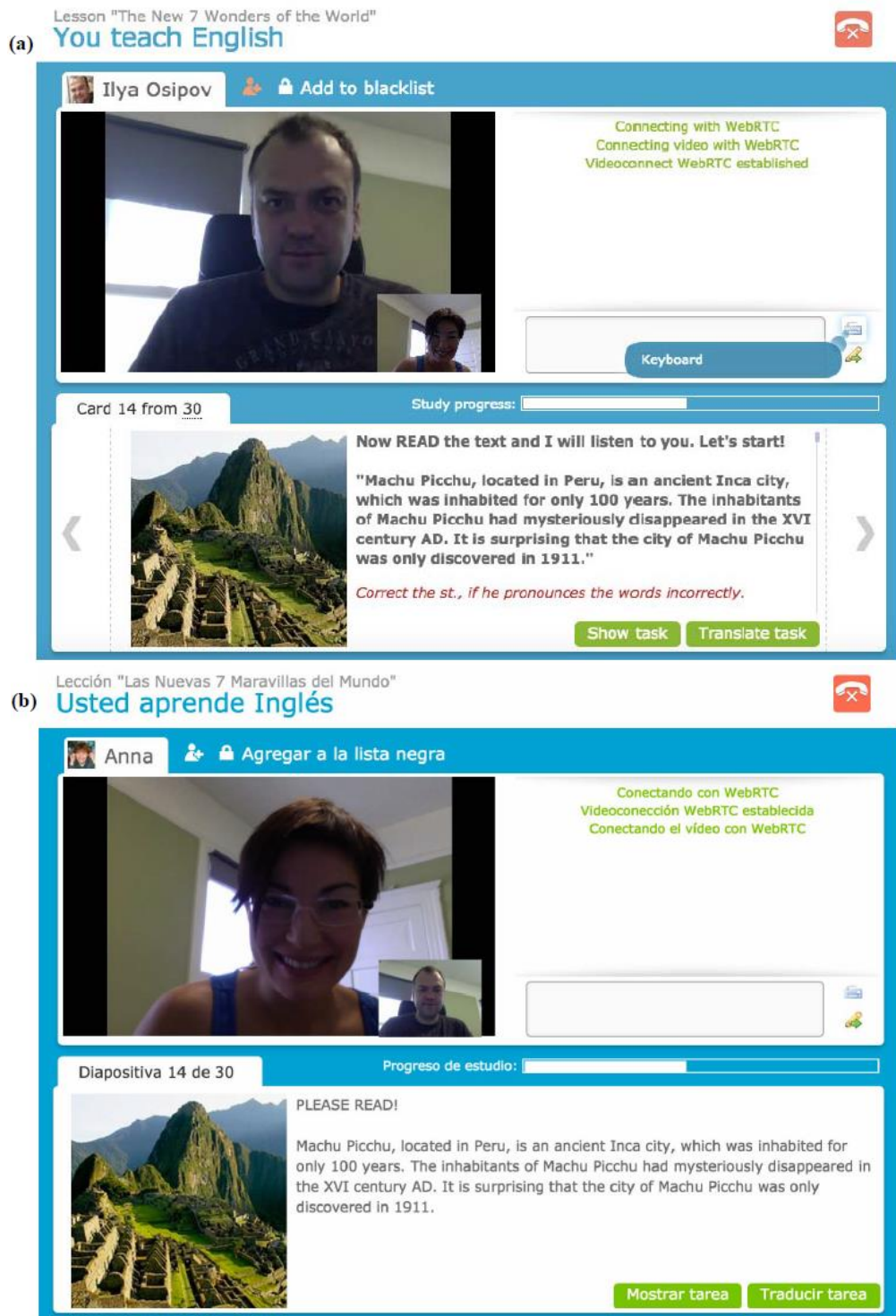


Figure 1. English lesson called "The New 7 Wonders of the World": (a) Teacher interface in native English; (b) Student interface in native Spanish.

2.3.2. Interface Hints for the Student

The teacher communicates with the student based on the predefined teaching materials, adding his or her own comments as necessary (Yousefi, 2014). These predefined teaching materials allow the teacher to stay on the topic of discussion. If the student doesn't understand the teacher, the hints can be turned on by pressing the "Show task" button (Figure 2 (a)), which displays the phrase pronounced by the teacher in the foreign language to the student. If the student still does not understand, the teacher can display the translation of the phrase by pressing the "Translate task" button (Figure 2 (b)).

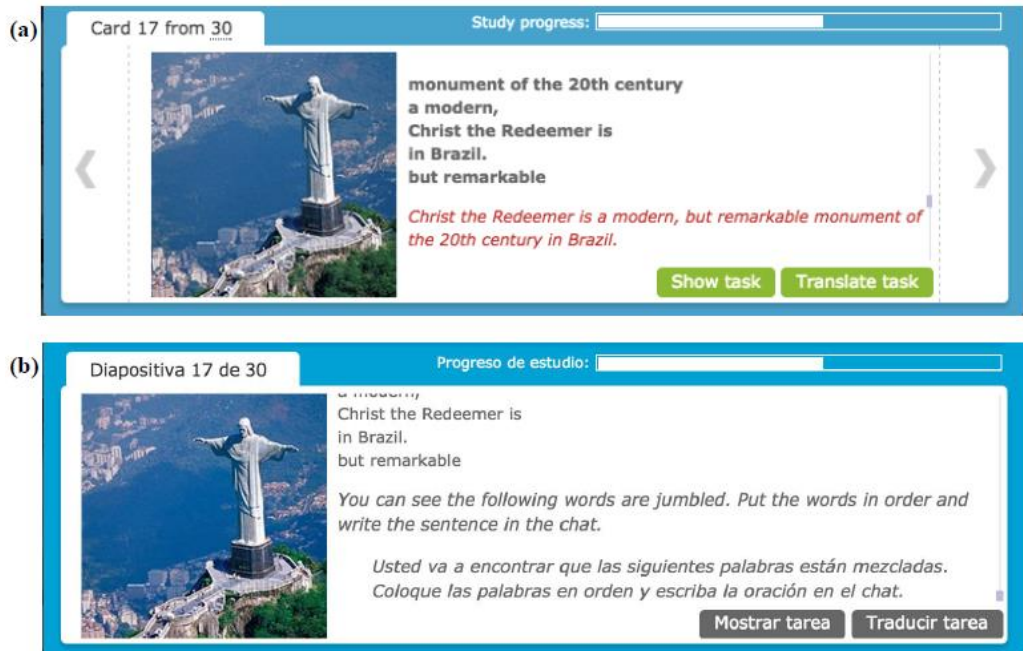


Figure 2. Writing practice card displayed for: (a) the teacher and (b) the student.

2.4. Initial System Testing

2.4.1. Template Phrases Creation

All template phrases for the student and the teacher, like description of a game, manners, hints, the need to encourage the student, and so on, have been tested many times to make sure that both the teacher and the student understand exactly what to do (Laborda, 2009). Tests showed that if a person sees a card for the first time, he or she is capable of reading one or two short sentences. Let's consider the template example shown in Figure 3(a).

APPLE

Please repeat it 3 times!

APPLE...

Now write it in the chat.

This template is the result of numerous tests that demonstrate that it works. After reading the template, the teacher understands that s/he is supposed to teach the word "apple" to the

student, which the student is supposed to repeat three times and then write it in the chat window. The initial version was: “Apple - please repeat it 3 times and write it in the chat”. While it looks shorter, the teacher simply read this text, but the student did not repeat the word and did not write anything in the chat. As a result, the percentage of the material learned by the student was quite low. Writing the word to be learned using caps, adding the second word “APPLE...” followed by the ellipsis produced the desired result of the teacher learning the word with the student. Tests showed that the student strictly follows the teacher’s instructions. Even if the task is displayed in front of the student, s/he will conduct the task only when asked by the teacher. Although the task of repeating the word three times is written in the student’s native language (Figure 3(b)), the student repeated the word only one time. After changing the text for the teacher, the student started to repeat the word three times and write it in the chat.

It took about 20 test lessons to tweak all template phrases and captions. These tests were conducted with people who saw the i2istudy system for the first time. Both the student and the teacher were sitting in separate rooms, watched by the developers. Only after the tasks were understood by both the teacher and the student, this testing was finished. The tests involved professional foreign language teachers and students from the Linguistics University of Nizhny Novgorod, Russia.

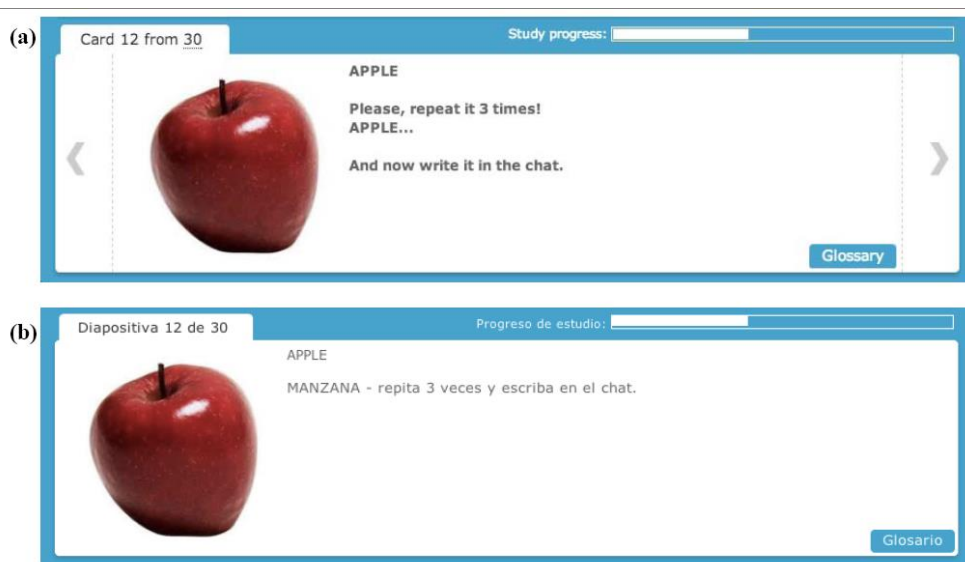


Figure 3. Words learning card displayed for: (a) the teacher and (b) the student.

2.4.2. Lesson Duration

There has to be a clear distinction between the on-line and off-line lessons. Tests showed that it is hard for both the teacher and the student to study for more than 30 minutes at a time. The ideal online lesson duration is 15-20 minutes. Initial lessons contained 100 cards and 20 new words to be learned. The lesson lasted for 1.5-2 hours, depending on the past of the teacher and the student proficiency in the foreign language. As a result, both participants got tired, losing the desire to repeat this experience. The lessons were then shortened to 45 cards, however, further tests showed that even 45 minutes is too long for on-line live human

interaction. This is why 20-30 cards are optimal. If the teacher is following the cards, without adding any comments and tasks, at the beginner's level the lesson takes 20 minutes (since the tasks are simple), and 30 minutes at the advanced level.

2.5. Four Levels of Language Learning

Based on the predefined materials, it is possible to teach foreign language from the zero preschool level. Students can continue at the beginner's level, improve to the intermediate level, and then progress to the advanced level. The user determines the level individually by reading the level descriptions:

Preschool - I have never learnt this language, can't read, don't know a word

Beginner - I can read, know the basic words and expressions

Intermediate - I have a reasonable vocabulary and understand written text, but I am not very good at understanding oral speech

Advanced - I have a large vocabulary and experience in communicating with native speakers, but lack speech practice

Multiple tests showed that people can determine their level of foreign language proficiency without additional testing.

2.6. Examples of the Tasks at Different Levels

As mentioned earlier, the lessons were created by imagining the live dialogue with the student. Based on this idea, the sequence of cards was designed, reflecting the whole educational process, using all the steps outlined in the **Sequence of cards** section. Following the lesson flow, specific examples of the tasks are given that get more complex, depending on the level. The preschool level is different than the other three, and is not described here.

Introduction (1 card) is the same for all levels, where the participants introduce themselves and get to know each other. Initial testing showed that the teacher tried to continue the lessons themselves by coming up with their own questions, not having a clue what to do next, until the following sentence was added: "After the answer click the slide" (Figure 4(a)). Before this change, the student continued to see the same card (Figure 4(b)). A simple comment provided for the teacher solved this problem. The teachers were quite surprised to see that all the teaching aids have already been created for the whole lesson.

Memory game (2 cards). The student is supposed to remember the learned words based on the pictures shown. The teacher shows five pictures, corresponding to the learned words (Apple in Figure 3, for example) in sequence without displaying the words. It is desirable to choose words that are easy to remember when looking at the corresponding picture. The objective is to repeat the newly learned vocabulary. Memory game from the beginner level lesson "Happy Birthday" is shown in Figure 5 as an example. The teacher sees the correct answers, shown in Figure 5(a), so that the teacher does not have to remember them. The student only sees the picture shown by the teacher in Figure 5(b) with understandable instructions in the native language.



Figure 4. Hello card displayed for: (a) the teacher and (b) the student.



Figure 5. Memory game displayed for: (a) the teacher and (b) the student.

Word Search game for the beginner level (1 card). The student is supposed to find the learned words hidden in the sequence of letters. The main objective at the beginner level is to learn and repeat the new words. The main task at the intermediate level is to learn the new words and repeat the old ones. For example, in the lesson “Making pancakes” the teacher’s card contains the following text:

1. wEGGwo
2. fGLASSt
3. froBOWL
4. CRACKeq
5. FRYiekk

Student's card:

1. WEGGWO
2. FGLASST
3. FROBOWL
4. CRACKEQ
5. FRYIEKK

In one word game for the intermediate level (1-2 cards). The task is to describe three pictures using only one word. The answer should be from the practiced vocabulary. For example, Figure 6 shows the lesson “My free time” at the intermediate level, where outdoor activities, picnic and calendar are described with one word, “weekend”.



Figure 6. In one word game displayed for: (a) the teacher and (b) the student.

Memorize the picture game for the advanced level (2 cards). At the advanced level the tasks should be interesting, since the student already understands the teacher and can ask questions if they don't understand something. The objective here is more complex than just learning the new words. This game develops attention, and is also entertaining for the people who are already fluent in a foreign language. The task is to remember all the picture details and then read the description without seeing the picture, and detect any discrepancies in the

description. For example, the lesson “Our environment” shows the picture and the description in Figure 7. As already noted, people fluent in a foreign language can easily speak the language, but are struggling to repeat the text from memory or can not hold their attention for too long, since other mental processes are involved (Ilgaz, Altunb and Aşkarc, 2014). It is important to use simple words for the distorted description, like describing color, size and specific objects, so that the answer would immediately come to mind.



Figure 7. Memorize the picture game displayed for: (a), (c) the teacher and (b), (d) the student.

The quiz (1-2 cards). The quiz contains intelligent questions, based on the lesson theme. The student should always have three options for the answer, so that the student does not get intimidated by not knowing the answer. Typically, a person is capable of selecting the correct answer out of three options. The question can be quite complex and interesting, but the actual language implementation depends on the level (Wang, 2008). Example of the level-based questions and answers are given in Table 4.

Table 4. Level-based questions and answers

Beginner level	Intermediate level	Advanced level
Who discovered America: • Vasco da Gama, • Marco Polo, • Christopher Columbus? Answer: Christopher Columbus	Michael Jackson was really fond of this cartoon series. He even wrote two singles for it. What is it? • The Simpsons • Futurama • The Flintstones Answer: The Simpsons	Benjamin Franklin became a vegetarian in order to spend the extra money he saved... • on books, • on milk, • in his old age? Answer: on books

Pictures in the quiz should reflect the question rather than the answer. For example, the question about Benjamin Franklin should show his picture, and not the picture of the books (Table 4). This exercise should encourage the student to think, and the picture should not provide an obvious clue.

Summary and good bye (1 card). The last card is the same at all levels. The teacher is finishing the lesson and informing the students to take the test at the end of the lesson on their own (Figure 8). After the lesson the student takes a multiple choice test consisting of 9 questions without the teacher to repeat what was learned and to assess how the material was learned. The student gets a grade. Passing the test is an important psychological step, since the student realizes what s/he actually learned (Laborda, 2009). A sample test at the beginner level is shown in Table 5.

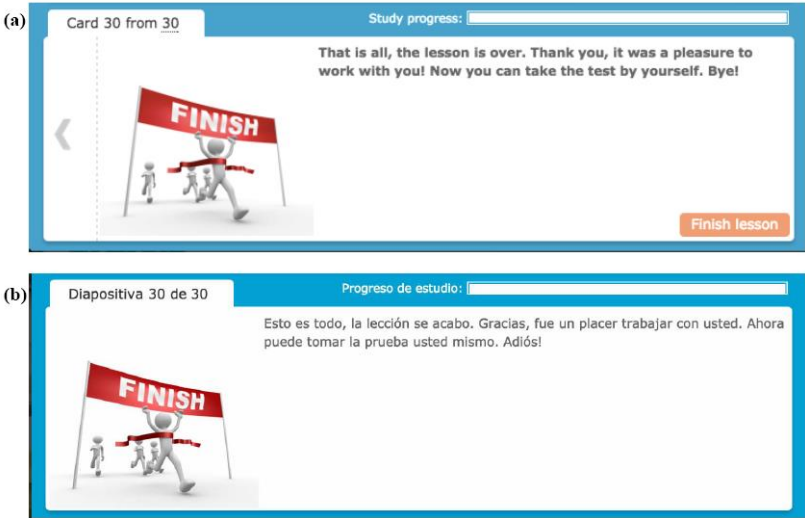


Figure 8. Last summary card displayed for: (a) the teacher and (b) the student.

**Table 5. Example of the multiple choice student test at the end of the lesson
“At the supermarket”, beginner level**

1	What is the title of our lesson today? At the supermarket At the cash-desk Buying food Answer: 1
2	Choose the correct answer! BASKET. It is: 1) Precio 2) Pan 3) Cesta Answer: 3
3	Choose the correct answer! MINERAL WATER. It is: 1) Agua mineral 2) Jugo 3) Leche Answer: 1
4	Choose the correct answer! TO PAY. It is: 1) Pagar 2) Comprar 3) Agarrar Answer: 1
5	Choose things that you can buy at the supermarket: 1) cheese 2) meat 3) dog 4) juice 5) table 6) basket 7) apple 8) computer 9) fish Answers: 1, 2, 4, 7, 9
6	What is wrong? PORK. This is: 1) meat 2) beef 3) food Answer: 2
7	Complete this sentence: At a cash desk you can pay by cash or _____. 1) money 2) by credit cart 3) not pay Answer: 2
8	Complete this sentence: _____ is made of milk. 1) fruit 2) bread 3) cheese Answer: 3
9	Complete this sentence: Fish has more calories than _____. 1) oranges 2) pork 3) beef Answer: 1
10	Test result is displayed.

These are examples of the specific tasks, while the system contains many more tasks and examples. However, the lesson specific steps have been clearly outlined using the discussed examples: introduction and getting to know each other; introductory questions; new material repetition; oral and written tasks; games, dialogues and quizzes; summarizing the lesson and saying good bye to the student. All lesson materials have been specifically designed for the i2istudy project and are unique.

2.7. Research Results

As a result of the conducted experiments, two strangers that met in the i2istudy system for the first time can have a dialogue in a foreign language, effectively helping each other learn. Now imagine that you are meeting this person for the first time. What would you talk about? The main achievement of the i2istudy system is allowing two strangers to carry on a conversation for over 15 minutes in a foreign language. Most users had no problems talking to a stranger online (Kim, 2003). This conclusion is based on the average lesson duration registered by the system. The end of the lesson is based on all different registered scenarios, from completing the task to closing the browser. Table 6 lists successful connections in minutes for each month.

Table 6. Successful connections, based on the duration and quantity for each month

Real connects									
Month	01.12 - 31.12	01.01 - 31.01	01.02 - 28.02	01.03 - 31.03	01.04 - 30.04	01.05 - 31.05	01.06 - 30.06	01.07 - 31.07	01.08 - 31.08
Successful connects duration, min	151	10835	5021	3645	6202	37037	47140	54974	38202
Number of successful connects	19	1228	492	131	587	3093	3868	3763	2661

The average lesson duration was 11.94 minutes (189,207 minutes, or 3153 student-hours divided by the 15,842 number of successful connections). At a first glance, this is not an outstanding result. However, it shows that with the help of the i2istudy system two strangers can carry on a conversation in a foreign language for 12 minutes. Besides, the average lesson duration increased to 14.35 minutes in August 2014. Also, very active loyal users, who spent many hours teaching the same lessons, appeared. Table 7 lists the most active users, based on their teaching duration for August 2014.

2.8. Conclusions for System Description

In the i2istudy system the teaching methodology is independent of the individual's knowledge. Thus, any person without professional teaching skills can be a teacher in the

i2istudy system. The only requirement is the ability to read and communicate in the native language. Based on the hints, even a student at the preschool level can communicate with a native speaker. The system interface allows adding any number of languages by simply translating the existing lessons. There is no need to recreate new lessons. The system currently supports English, Russian, German and Spanish languages. All the user needs to do is select the native language and the language to be learned, and learn from native speakers.

Table 7. System leaders, based on the teaching time spent in the system

Successful tutor's connects duration, min			
Duration, min	User ID	Name	Email
352	19131	L. M.	l.....@mail.ru
298	18418	j. b.	d.....@outlook.fr
277	15433	Л. Д.	h.....@mail.ru
276	18573	H. A.	
260	28516	j. s.	m.....@gmail.com
254	391	A.	p.....@yandex.ru
216	22144	S. R.	s.....@gmail.com
213	20378	R. K.	m.....@gmail.com
200	1552	ب.ح	p.....@yahoo.com
145	29776	A. S.	a.....@yahoo.com
137	25718	Z. R.	z.....@hotmail.com
130	17253	R. M.	m.....@hotmail.com
126	26034	L.	s.....@yahoo.com
122	41271	A.	a.....@mail.ru
122	20179	D. V.	v.....@mail.ru
105	40693	E.	r.....@mail.ru
98	25965	A. M.	a.....@yahoo.com
98	40252	f. s.	f.....@yahoo.com
95	457	A. V.	b.....@yahoo.com
94	17364	A. H	a.....@gmail.com

Recalling the study mentioned in the beginning, the following foreign language resources are currently available online:

1. Interactive language resources for self learning
2. Digital textbooks
3. Individual lessons using Skype
4. Mobile educational applications
5. Mobile value-added services

All these models have both advantages and serious drawbacks, such as lack of the live interaction and the guarantee of the quality of teaching materials. The described platform allows combining high quality lessons, since these lessons have been custom developed specifically for the platform by the professional teachers and live human interaction with the

native speaker. The system also facilitates individual tutoring, the most expensive service in the World, without involving real exchange of money, based on the language training barter between the teacher and the student.

It is clear that the system sparks an interest in a large number of the users, allowing them to carry on a conversation in a foreign language. This experience enhances communication and spoken foreign language skills. The authors concluded that the system should be developed further to better facilitate spoken language learning, based on retention and viral user attraction.

3. RETENTION AND VIRAL USER ATTRACTION

3.1. The K-factor

Figure 9 shows the Wikipedia write-up about the K-Factor in marketing. Certainly, in theory the information provided by Wikipedia is correct in Figure 9. However, this is just an eye-brow theory. In real life, this K-factor should be calculated during the entire lifetime of a project, from the launch until the closure. This formula corresponds to the “global” K-factor, which nobody really needs, aside from the security service of a venture capital trying to find out why this or that startup has gone dead.

In real life, what we are interested in is the “local” K-factor (the term is borrowed from “Freemium Economics” by Eric B. Seufert, 2013), i.e., the value calculated during a certain period of time. For example, within our approach, we use weekly factors, i.e., the “weekly K-factor”. Moreover, in our case the statement that the project grows or collapses exponentially, if the value of the K-factor exceeds or falls short of unity, respectively, is wrong!

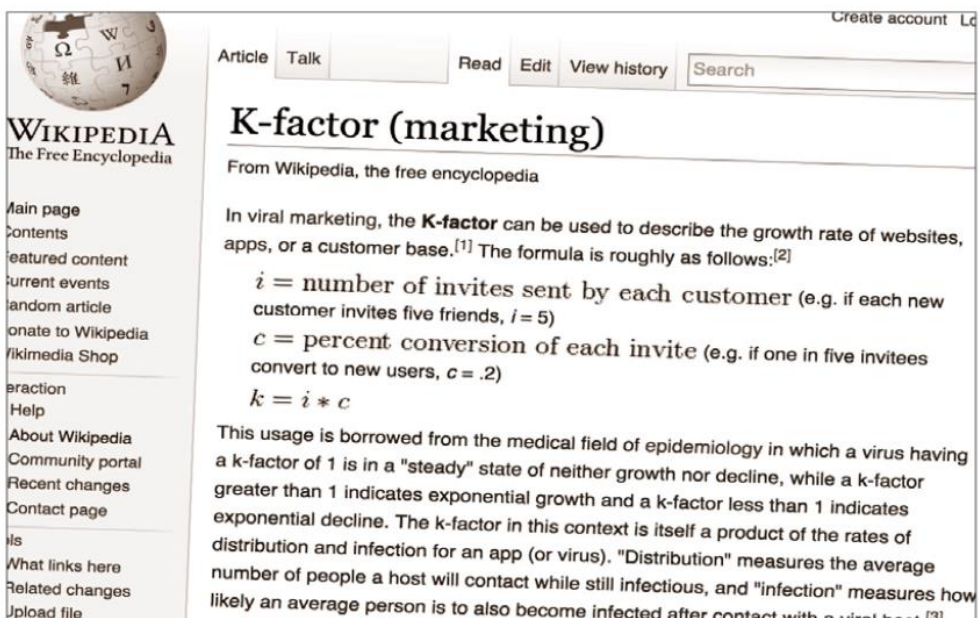


Figure 9. “Wikipedia” write-up about the K-Factor in marketing.

However, Richard Fond, the author of the Bliss Drive blog, and the Wikipedia entry, and even Harry Harrison in his story called “The K-factor” fail to allow for many factors. Borrowing the term blindly from nucleonics and epidemiology, they assume that merely “infecting” a newcomer is sufficient to expand the user database. In reality, how a project retains existing users is more important than how fast it grows. Also, the ways, which are used to retain users, should enter the formula.

K-factors of actual projects rarely exceed unity, for long periods of time, anyway. A normal current value of the K-factor for a successful and growing project at any given time is equal to 10%, 20%, or 30%, and the project is thriving at that, despite the fact that it should collapse, according to the classical formula. But why? Because it is not a nuclear explosion or a plague in a population of mice, where the death rate of the infected animals is 100%. The thing is that in the normal project, the “infected” users continue using the project and even attract new customers in the following time period.

This can be regarded as a different factor, namely, K-retention, being the ratio of the number of the users, who use the service repeatedly during the current period, as compared with the previous period. This parameter will always be less than unity, since some users will be lost anyway. Even in such environments as a prison or North Korea, this factor fails to reach unity due to release of inmates, mortality, and escapes.

The real, “fundamental” coefficient, which shows the natural dynamics of the project, is the sum of the above-specified factors, specifically, K-factor and K-retention. If the total exceeds 1, the project grows, if it is less, the number of loyal users decreases.

Additionally, we call for using only “active” users when calculating these factors, i.e., those who, rather than being just passive visitors, perform some purposeful actions typical of the project, game or service under consideration. For example, for a drawing service, it is creation and saving of a new sketch, for a game, playing through at least one level, etc. Only then we will obtain unbiased evaluations of the parameters.

For instance, if we create a virtual prison, we should count only the prisoners who have real prison terms, rather than adding all their relatives, guards, controllers, investigators and lawyers. The latter are random factors in this game.

Fair and equitable calculations will show that for a good project, the K-factor will be equal to about 10% (if it is higher, accept our congratulations!), and the K-retention, to about 90%. The sum of these parameters will yield the sought-for value of 1, the stability level, when the project neither grows, nor withers away. The only thing to be done here would be to increase at least one of the parameters by 1% to make the project increase by 1% daily or weekly. It is known that the daily growth rate of 1% yields a 37-fold increase per year. We call the sum of the above-said two factors the “F-growth”.

3.2. Gamification, Virality and Retention

There are numerous products utilizing the freemium model, such as mobile applications, SaaS solutions, software, web applications and others (Seufert, 2013). However, the freemium model is not as simple as it may seem. The author analyzed the statistics of the users’ behavior in the educational collaborative platform available to everybody as shareware and through the freemium model (Osipov, Volinsky and Prasikova, 2015). The platform is a web site for learning foreign languages, described in the previous section, with users from all

over the World. The main idea of the system is based on the fact that regardless of all the grammar learned in college, students are lacking live interactions with the native speakers to increase their spoken language skills (Osipov, Volinsky and Prasikova, 2015). Finding a native speaker is not an easy task, which typically also requires paying for the tutor lessons. The authors noticed, based on the students studying Spanish, that professional teacher is not required to learn basic communication skills. What's needed is a partner, who's ready to help using already prepared materials, a Spanish native speaker. Spanish native speakers are eager to learn English in exchange for teaching Spanish.

Freemium, which is a combination of the words Free and Premium, business model assumes the maximum product market distribution, along with the capture and retention of the largest possible number of users. Part of the users, which for various products varies from 3% to 10%, takes advantage of the premium features, allowing the creators not only to pay for the entire system upkeep, including free parts, but also to make a profit (Mäntymäki and Salo, 2011).

Figure 10 shows typical cycles of the freemium application. Arrows indicate main user and information flow, including the 4 main cycles:

1. The in-app cycle – the main application cycle, the core cycle, the basic function for which the user decided to use the application (in our case it's learning foreign language with native speakers).
2. The monetization cycle (denoted by the small dollar sign \$ in Figure 10). This is an additional cycle, which attracts the most venturesome people involved in the process, representing additional features. This cycle is smaller, since it is not available to all participating users (especially in the freemium business model).
3. The retention cycle is when users leave and subsequently return into the system. To successfully return and retain the users in the system, special means are utilized, from e-mail notifications, social networks and other communication channels reminders of the events, which occurred during the user absence from the system, to gamification.
4. The viral cycle when existing users invite new users from the external environment (e-mail, social networks, blogs, forums, personal websites, applications, and other communication channels), including the new users accommodation.

Besides, the diagram in Figure 10 also shows different user flows into the web application, including organic “word of mouth” users, bookmarks, search engines, motivated and purchased users, along with the invited users (Ellis and Brown, 2014). The downward arrow shows users lost directly from the web front page, as well as from any other of the mentioned cycles. It should be noted that the app cycles: the core, viral, retention and monetization cycles are antagonistic, as they are competing for the user attention, which is always lacking. The system developers must understand which cycles have priority.

When creating freemium products, there are two main business approaches:

1. Purchasing and other paid users (traffic) attraction. Part of the traffic can be monetized by selling additional premium services and attracting new users by spending the money earned. The key factor in this approach is money, thus a successful monetization model is required to involve a significant percentage of users

in the pay mechanics to maintain the balance. The positive balance is achieved between the revenues from the existing customers minus the cost of attracting new users. Moreover, the cost of attracting new users can be substantial, and there is a risk not to recover this high cost from monetization. Pluses of this approach include fast money earning, and that the K virality factor (K-factor, Reichheld, 2003) can be less than one (discussed below).

- 2. Involving existing users into the product promotion through virality. It is necessary to ensure that the virality coefficient (the K-factor) is significant, which for a number of products is difficult and even unattainable. The volume of users with this approach is growing exponentially until it reaches saturation (Cohen, 2014). The product can contain features from both approaches, with the emphasis on monetization and on expanding the user base. However, given the limited user's attention, one of the approaches must be dominant.

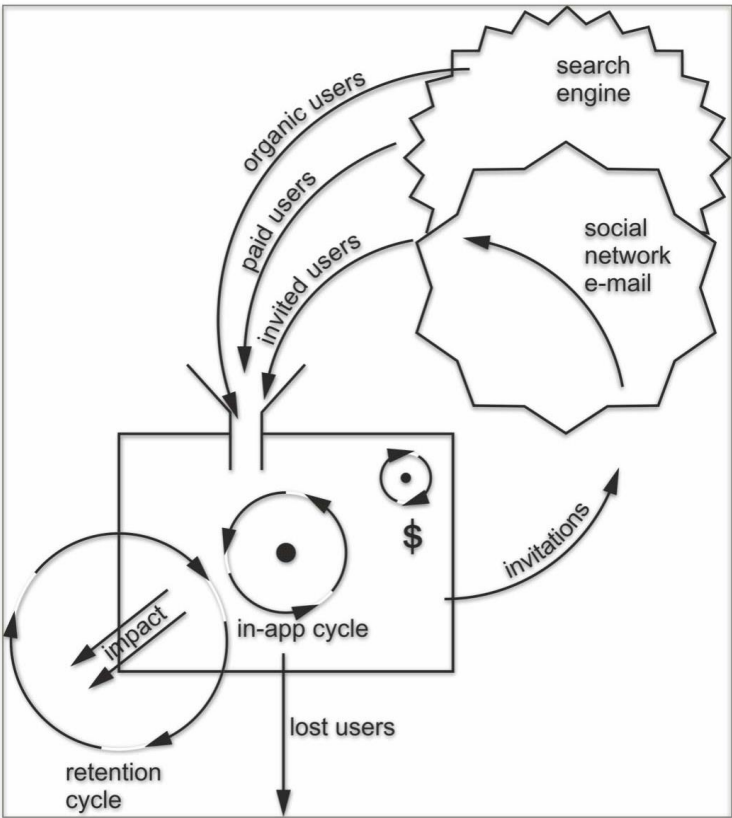


Figure 10. Typical cycles of a freemium application.

3.2.1. Viral User Base Expansion

Let’s consider the second approach, which we call freemium with an emphasis on virality. David Skok (2009a), successful venture capitalist, wrote about the freemium virality-emphasized products: “...in a typical business the single biggest expense is sales and marketing, and recognize that offering a free product/service is an extremely smart way to acquire customers at a low cost that can then be monetized in a different way.” “Another

powerful effect of using the free strategy is that it usually results in a far larger customer base using the free products, who become proponents for your company. This expanded footprint or market share can have a huge effect on the price that acquirers or investors are willing to pay for your company, as they recognize that even though these customers have yet to be monetized, they represent a great potential for future monetization. Twitter and Facebook are two perfect examples of this.” “Another way of looking at the importance of footprint or marketshare is to recognize the importance of market leadership. In the tech industry, market leadership is usually self-reinforcing unless the company does stupid things to annoy its customers. Even if you have gained market leadership by giving away a product/service for free, the financial markets and acquirers realize that market leadership is worth a significant premium over niche players that may have more revenue.”

However, the strategy of viral user attraction cannot be utilized forever. Seufert, the author of the book *Freemium Economics* (Seufert, 2013) presents a concept where the system reaches saturation in terms of the number of users. All efforts invested in the virality mechanics will not bear fruit when the market niche is already saturated, and all potential users either already use the product, or know about it, but prefer not to use it. Obviously, this is the best time to refocus the product and change the user's attention to monetization, which we discussed as the strategy number one.

3.2.2. Virality Realization Methods (Invitations)

The viral marketing requires several components: the sender, the message and the medium for dissemination, including recipients, along with the context in which the message is received.

There are two ways for the user to invite new users:

Open invitations - is the viral mechanism, where the user places invitations in social networks, blogs, personal web pages, etc. addressing an undefined set of individuals.

Direct personal invitations initiated by the existing users to the potential new users using different means of communication by e-mail, personal communication, social networks, SMS, etc. Typically it is hard to account for all open invitations. The author used simplified statistics by calculating how many people were invited by this method, and how many people were able to use this method to initiate invitations. The system calculates how many open invitations were made by each user (via built-in instruments), and how many new users joined as a result (including open invitations initiated by the user and not generated by our system). Table 8 lists the number of published invitation links (open invitations) and how many users post these links on the weekly basis. Statistics reflects only built-in invitation publication mechanism.

Table 9 lists the number of the newly joined users invited through the open links, including all types of invitations. Personal direct invitations allow calculating all parameters and quantifying all steps of the viral cycle. The system accounts for how many users make personal invitations, how many invitations are generated per each user, how many invitations reach the addressee, how many recipients come to the service, and how many register and get involved in the learning/teaching process.

Table 10 lists the number of individual invitations and the number of users that sent such invitations, while Table 11 lists the number of personal invitations per week.

Table 8. The number of published invitation

Week:	21.04 - 27.04	28.04 - 04.05	05.05 - 11.05	12.05 - 18.05	19.05 - 25.05	26.05 - 01.06	02.06 - 08.06	09.06 - 15.06	16.06 - 22.06	23.06 - 29.06	30.06 - 06.07	07.07 - 13.07	14.07 - 20.07	21.07 - 27.07	28.07 - 03.08	04.08 - 10.08	11.08 - 17.08	18.08 - 24.08
Publishes total						10	17	7	19	23	12	15	7	7	12	33	14	15
Published users total						8	8	3	10	11	9	10	5	5	10	28	13	10

Table 9. The number of the newly joined users invited through the open links

Week:	21.04 - 27.04	28.04 - 04.05	05.05 - 11.05	12.05 - 18.05	19.05 - 25.05	26.05 - 01.06	02.06 - 08.06	09.06 - 15.06	16.06 - 22.06	23.06 - 29.06	30.06 - 06.07	07.07 - 13.07	14.07 - 20.07	21.07 - 27.07	28.07 - 03.08	04.08 - 10.08	11.08 - 17.08	18.08 - 24.08
Invited by public link		21	15	7	11	13	47	81	70	10	26	29	25	28	30	35	40	15

Table 10. The number of individual invitations

Week:	21.04 - 27.04	28.04 - 04.05	05.05 - 11.05	12.05 - 18.05	19.05 - 25.05	26.05 - 01.06	02.06 - 08.06	09.06 - 15.06	16.06 - 22.06	23.06 - 29.06	30.06 - 06.07	07.07 - 13.07	14.07 - 20.07	21.07 - 27.07	28.07 - 03.08	04.08 - 10.08	11.08 - 17.08	18.08 - 24.08
Requests total	44	156	212	32	618	438	942	595	1494	838	1073	3029	5823	2693	2732	3156	1129	1683
Requested users total	2	22	14	4	17	37	41	36	90	44	80	127	103	73	52	83	40	24

Table 11. Total number of personal invitations

Week:	21.04 - 27.04	28.04 - 04.05	05.05 - 11.05	12.05 - 18.05	19.05 - 25.05	26.05 - 01.06	02.06 - 08.06	09.06 - 15.06	16.06 - 22.06	23.06 - 29.06	30.06 - 06.07	07.07 - 13.07	14.07 - 20.07	21.07 - 27.07	28.07 - 03.08	04.08 - 10.08	11.08 - 17.08	18.08 - 24.08
Personal invited total	1	7	5	9	21	35	131	170	66	90	174	119	110	138	145	132	69	58

Let's define the metrics parameters. The user means registered and authorized user of the service.

dU stands for daily users;

dNU are daily new users;

dAU are daily active users (users who spent more than 5 minutes in the system);

U is the total number of all users;

IU is the number of invited users;

D_i is the total number of invitations per day;

A_iPSU is the average number of invitations per spreading user (A_iPDSU is the same per day);

A_iPU is the average number of invitations per user;

DIU is the number of daily invited users;

IP_i is the ratio of people who accepted an invitation to the number of invitations sent (conversion percentage).

The K-factor conceptually is the average number of additional users introduced to the product by each user (Seufert, 2013, Chapter 7, p. 170). For practical purposes we calculate the K-factor as the ratio between the users attracted through viral methods in a certain time period, to all active users in this time period (Skok, 2009b). Theoretically, we should have used the previous time period, setting it equal to the duration of the viral cycle. However, the length of the viral cycle is difficult to establish, since the reaction to the invitation timeline is very short in our system. In a typical case, sending invitations and accepting them gets completed in one day. For calculating the K-factor, only new users (dNU), or all users in a certain time period (dU) can be used, along with the active users in a certain time period (dAU). The author used active users (not considering uninterested users, who spent very little time in the system) as the base, as it gives the most accurate results in our estimates. For practical purposes some sources used only new users (dNU) as a base, comparing all users attracted virally, to all types of new users. The authors believe this is not quite correct, since all active users contribute to virality and not only new users, thus:

$$Local K_{factor} = \frac{dIU}{dAU} \quad (1)$$

The term K-factor comes from epidemiology, "in which a virus having a K-factor of 1 is in a "steady" state of neither growth nor decline, while a K-factor greater than 1 indicates exponential growth and a K-factor less than 1 indicates exponential decline." (Lee, 2008). The K-factor, which is also called viral coefficient in the literature, can be calculated as the number of invitations sent by each user multiplied by the conversion percentage of the new users (Fong, 2014). For example, if the average number of invitations per user is 5, and 20% of the invitees register in the system, i.e., become new users, then the K-factor = $5 \cdot 0.2 = 1$. Time-independent K-factor averaged over the whole time of system operation the authors call the global K-factor, which is calculated in the following way. The conversion percentage, IP_i is the number of invited people, IU , divided by the number of invitations, i :

$$IP_i = \frac{IU}{i} \quad (2)$$

$AiPU$ is the average number of invitations per user, calculated as the average number of invitations per user, i , divided by the total number of users, U :

$$A_iPU = \frac{i}{U} \quad (3)$$

Then the global K-factor is calculated as the product of the average number of invitations per user, $AiPU$ (equation 3) and the conversion percentage, IP_i (equation 2):

$$Global K_{factor} = A_iPU \cdot IP_i \quad (4)$$

The K-factor dynamics reflects the users' mood swings, and how they react to the introduction, activation or deactivation of one or another viral mechanics, involving them in the activities of inviting new users, and whether these mechanics are well accepted. Thus, for practical purposes the authors utilized the local K-factor, calculated daily. The authors call it the daily K-factor, dK -factor, which is based on the daily active audience, dAU . This daily K-factor is considered the most important parameter of the viral cycle, which was used in the construction of viral mechanisms of the project:

$$Daily K_{factor}, dK = dAU \cdot IP_i \quad (5)$$

Figure 11 shows the i2istudy foreign language educational platform K-factor dynamics in %. It is important to understand that if the K-factor is less than unity (e.g., 50%), in the absence of retention (when the loyalty of existing users is zero), the system growth attenuates.

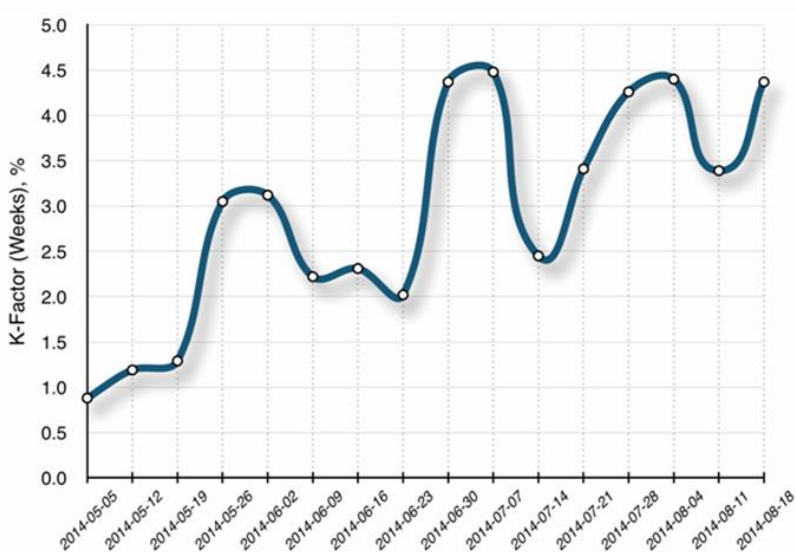


Figure 11. The i2istudy foreign language educational platform K-factor dynamics in %.

In the best scenario, such virality mechanism partially compensates the users' loss as a result of the normal loyalty retention cycle decrease. This K-factor increases the effectiveness of paid user attraction. For example, purchased 100 paying users get involved in the viral mechanics and invite additional 50 users, which reduced the average price of each user and saved the budget. If the K-factor is greater than 1 (say it is 200%), it leads to the geometric progression growth of the user base. For example, purchased 100 users attract 200 new people, and if K-factor remains the same, the new users will attract 400 new people, and so on. Virality works as long as the entire mass of potential users will not reach saturation in their social matrix and a given market.

3.2.3. Virality, Retention and Monetization Relationship

In his book *Freemium Economics*, Eric Benjamin Seufert in the *Virality and Retention* section, on page 175 said: "Virality and retention exist on opposite sides of the acquisition threshold: virality describes how users are introduced to a product, and retention describes how long users remain with a product. But in essence, both sets of metrics measure the same general sense of delight users feel for a product, manifested in different ways. To that end, virality and retention generally exhibit a positively correlated relationship: products that users are inclined to return to over a long period of time are also likely to be products that users invite others to join."

In our opinion, virality and retention are characteristics amenable to manipulation by the creators of the product. Even a weak product can successfully maintain good retention and virality performance, if appropriate mechanics and effects (impact, gamification) are well integrated into the product and successfully motivate users to these actions. This situation resembles a grocery store, where buyers are manipulated by the layout, marketing, branding, packaging and a discount system, and buy groceries that are not the best and healthy as a result (Glanz, Bader and Iyer, 2012).

Certainly all three parameters: virality, retention and monetization are related. Users with high product loyalty get increasingly involved in the mechanics of virality and monetization (Fields and Cotton, 2012). Despite competition for the user's attention, these mechanisms may spur one another, and all sorts of techniques, such as gamification, which is usually considered in the literature as part of retention, can serve monetization and virality.

Oddly enough, monetization, can also spur virality and retention. For example, premium paid services can be alternatively earned by participation in the viral and gamification programs. The dollar price of these premium options demonstrates their value to the users. For example, when the user knows the cost of acquiring new premium option for real money, it may be easier to motivate the user to earn these premium options by performing certain tasks and actions, such as inviting friends.

It is important that the experience of using the main basic functions of the product cause admiration, then the virality and retention mechanics come into play. If they are unbalanced, for example, with perfect virality and poor retention, the growth of the user base, caused by the successful virality, will compensate for the loss of the same base due to disloyal users. The opposite situation of poor virality with excellent retention leads to the product and its user base stagnation, and eventual defeat by the competitors.

Coefficient of the product audience growth, F-growth, can be expressed as a sum of the coefficients of the viral K-factor and the retention factor, K-retention:

$$F_{growth} = K_{factor} + K_{retention} \quad (6)$$

Equation (6) is the main formula of the freemium product growth, based on the viral spreading. It is clear that this formula does not take into account alternative methods of attracting users, such as paid users and organic users, who came through search engines, word of mouth, or due to the brand popularity. K-retention is always less than one over a long period of time, since no products can retain its audience 100% at all times.

$$Local K_{retention} = \frac{dU - dNU}{dU_{-1}} \quad (7),$$

where dU is the daily audience for a given day; dU_{-1} is the previous day audience and dNU are the new users for this time period. It's convenient to use only active audience for calculations, by taking into account only the new users that have become active, but not all registered users. Similar situation is with the new invited users, among which only active users are accounted for:

$$Local K_{retention_A} = \frac{dAU - dNU}{dAU_{-1}} \quad (8)$$

For example, if the viral K-factor is 20%, and K-retention factor is 90% (i.e., 9 out of 10 people are coming the next day), the growth coefficient will be $0.2 + 0.9 = 1.1$ and the system will grow on its own by 10% of its daily (or other accounting period) audience. Coefficient of the system self growth can be represented as:

$$F_{growth} = \frac{dAU_1 - dNU + dIU}{dAU_0} \quad (9)$$

This is the ratio of the audience from the next period of time without accounting for the new users, but accounting for the users invited by the viral techniques, divided by the audience from the previous time period. If dNU and dIU are equal, then all new users get involved through viral methods exclusively (there is no paid and organic traffic), and in this case:

$$F_{growth} = \frac{dAU}{dAU_{-1}} \quad (10)$$

Table 12. Data and corresponding parameters calculations for the i2istudy project

	21.04-27.04	28.04-04.05	05.05-11.05	12.05-18.05	19.05-25.05	26.05-01.06	02.06-08.06	09.06-15.06	16.06-22.06	23.06-29.09	30.06-06.07	07.07-13.07	14.07-20.07	21.07-27.07	28.07-03.08	04.08-10.08	11.08-17.08	18.08-24.08
Weekly Active Users (<i>wAU</i>)			297	801	867	979	1080	1213	1827	2126	1763	2624	2572	1924	1716	1810	1576	947
New Active Users (<i>wNU</i>)			239	575	572	643	695	776	1358	1464	1140	1881	1643	1129	998	1066	824	358
Invited Active Users (<i>wIU</i>)			5	9	10	32	54	81	85	41	73	68	52	65	77	78	52	42
K-Factor= <i>wIU/wAU</i> , %			0.88	1.19	1.29	3.05	3.12	2.22	2.31	2.02	4.37	4.48	2.45	3.41	4.26	4.4	3.39	4.37
K-Retention = (<i>xAU</i> - <i>xNU</i>) / <i>xAU</i> 1, %				76	37	39	39	40	39	36	29	42	35	31	37	43	42	37
F-growth, %				70	38	42	45	48	46	38	33	46	37	33	42	38	44	40

Table 12 shows the data and corresponding parameters calculations for the i2istudy project. As a side note, it is necessary to take into account that the very properties of the product may be a barrier to its viral spread and reuse. For example, users absolutely don’t want to advertise to their friends that they participate in dating services (Blackhart, Fitzpatrick and Williamson, 2014), which negates any virality efforts. On the contrary, the users promote their morning runs and other physical exercises, even without strong viral mechanics and ingenious motivations (Kamal, Fels and Fergusson, 2014; Loss, Lindacher and Curbach, 2014). An obstacle to the viral spread may be excessive annoyance of the viral mechanics, which can be negatively perceived by the existing users, and even considered as spam by the invitation recipients (Grimes, Hough and Signorella, 2007). In addition, it’s a common mistake to promote business-to-business (b2b) services using virality methods, which usually gives poor results (Davidson, 2014), with the exception of individual cases (Grindeanu, 2014).

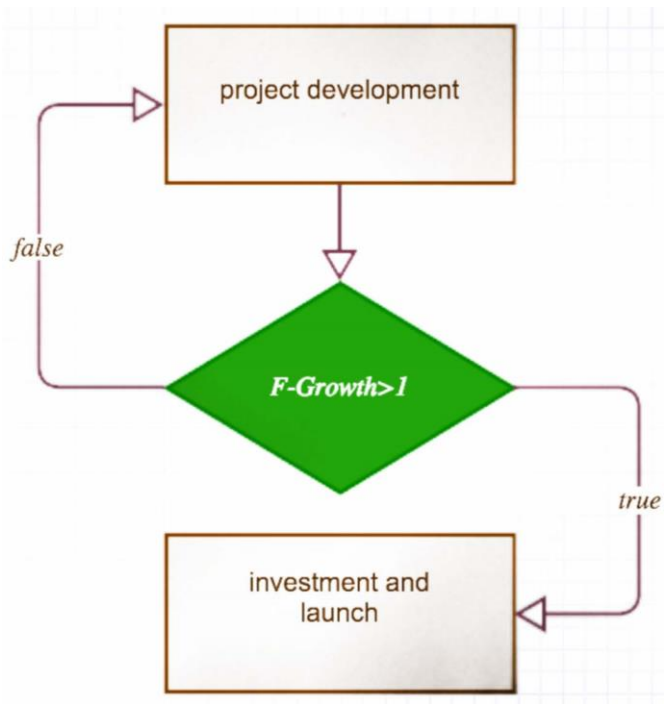


Figure 12. The freemium product development diagram in terms of the F-growth factor.



Figure 13. “Invite a friend, earn 30 minutes!” system interface.

If the F-growth factor is less than one, then the product cannot grow and loses users with all the consequences for the product and its team. However, if the team can achieve the F-

growth factor greater than one, the product grows exponentially. It is the ultimate goal for the product team to achieve non-paid user base growth. This is necessary to achieve the project's capitalization exceeding the investment in the purchase of the user base.

Note that the positive F-growth factor can compensate for other shortcomings, such as the quality of the product itself. For the overall project development strategy, investment in virality and retention is an alternative to investments in advertising and public relations, which is often a cost-effective solution, compared with the cost of development (programmers salaries, etc.), marketing and associated staff costs. The freemium product development diagram in terms of the F-growth factor is shown in Figure 12.

When building a freemium product, it is wise to take it to the market and to work out the viral and retention mechanics on small volumes of paid audience, since these mechanics can be easily evaluated statistically and analyzed. Having a positive F-growth, venture capital funds can be attracted, and the project can be brought to a large market (Figure 12). As for our specific product, which was used to conduct these studies, we see that the value of F-growth varies slightly above 40% in Table 12, which is not satisfactory. As a result, the product has been improved, based on the partnership and monetization programs.

4. THREE SIMPLE WAYS TO MAKE A PARTNERSHIP PROGRAM WORK

The authors have launched a partnership program for the i2istudy project, which works at the intersection of communication and education, so that the existing users could involve their friends as newcomers to the project. Successful services use partnership actively and motivate their users to attract their friends on the win-win basis by giving away bonuses and gifts, both to invitees and inviting persons. We were fascinated by the idea and developed an interesting partnership program, but the question was how to attract our existing users to it.

The simplest idea was to place the slogan “Invite a friend, earn 30 minutes!” (Minutes are the internal system currency, which operates as a time bank). Having taken an interest in the proposal, a user would click the link and go over to a special interface with the instruments for posting of open referral invitations and sending of personal links (Figure 13).

This simply didn't work. Although there were some newcomers registered on the basis of referral links, and the users started to send out invitations, the number of invitees was minimal (less than 1%, i.e., the local K-factor was equal to approximately 1-1.5%). The i2istudy project serves the entire World. The authors paid attention to the fact that people react willingly when they are simply asked for help. As soon as one hears the sacred “Could you help?”, s/he is ready to listen to you.

4.1. Method One: Request for Help

We changed the message and generated the following call to action: “Please help our project. We need your help!” Frankly speaking, we added this text just for the sake of an experiment. We were interested in how this concept would function. Recall that we are

talking about the internal interface of the system, where we dealt with our registered and essentially loyal customers.

This phrase certainly needed an explanation, and we added a pop-up window with the following text: “Our project needs new users. We want to grow. We would greatly appreciate you inviting your friends to join. Moreover, we add 30 minutes to your account and the account of the invitee who has accepted your invitation.” The “Help the Project” button was located at the bottom of the window (Figure 14).

The window was not modal and had the closing cross in the top-right corner. Additionally, the window closed in response to a click at any point outside the window boundaries. It is curious that 26% of the customers responded to the “Help our project” call, but simply closed the window upon seeing it. However, the local K-factor increased by almost one percent, i.e., in absolute terms, we started to attract almost twice as many new users. The authors decided to go on with the experiments.

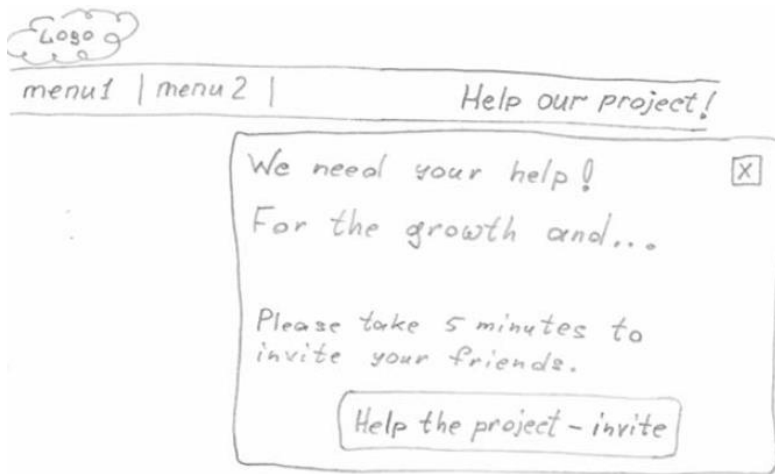


Figure 14. User interface with the “Help the Project-invite” button.

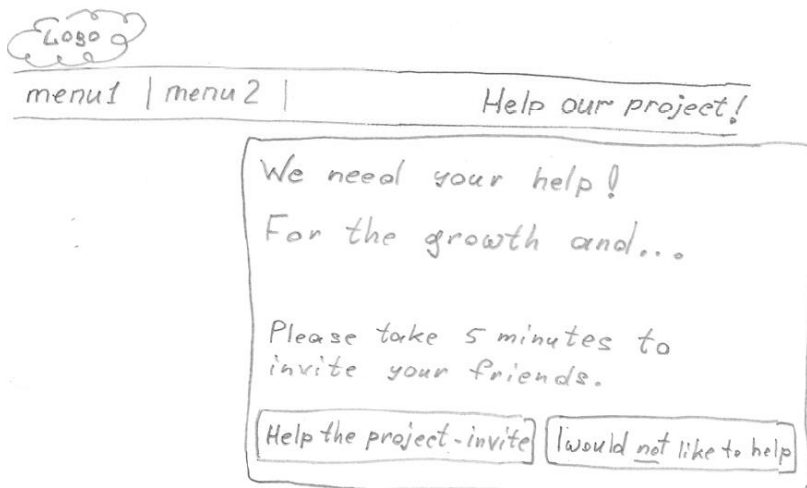


Figure 15. User interface with the “I would *not* like to help” button.

4.2. Method Two: Refuse to Refuse

The authors removed the cross from the window of the corner and made the window modal, i.e., it stopped disappearing in response to clicks outside the window. Moreover, such clicks became nonfunctional, but we added an extra button “I would not like to help” in Figure 15. Thus, a visitor saw only two options now: s/he could either help, or refuse to help us. The catch was, though, that his or her refusal was explicit and obvious. There was no way to skirt the request. It worked! It turned to be a psychological trap, which we drove the user to. They either refused to help, or helped. Few people choose the dark side in real life and we got 73% of positive answers.

Certainly, most of them stopped at the next step, when they saw the interface window for inviting their friends and just did not use it. Nevertheless, the K-factor after this modification was equal to 4%, i.e., we doubled the number of newly attracted users. This is an amazing result for a minor interface trick!

4.3. Method Three: A Perfectionist’s Progress Bar

After a user has invited somebody or just has sent out some invitations, it would be inappropriate to continue asking them to help. However, we implemented the VIP status progress bar, where the user could see the number of joined friends (Figure 16).

Unfortunately, the authors could not determine how this trick increased the level of engagement in the invitation process, since there was no reference to compare the data with. As a tentative appraisal, we can quote this increase as 1000%, since before we used this tool, we had not used the support from people who had helped already. Nevertheless, we measured the local K-factor regularly, and it reached 6.5%.

Remember that the K-factor (virality factor) is the ratio between the number of new users, who are invited by existing users, and the number of the existing users. We calculate the local K-factor for specific time periods, i.e., weeks. With no natural drain of users, the positive K-factor characterizes the viral growth of the system. More detailed information about the virality factor and its interrelation with the drain and retention of users can be found at [toptal.com](http://www.toptal.com/data-science/growing-growth-perform-your-own-cohort-analysis/) (<http://www.toptal.com/data-science/growing-growth-perform-your-own-cohort-analysis/>). Figure 17 shows cohort analysis calculations results from the site.

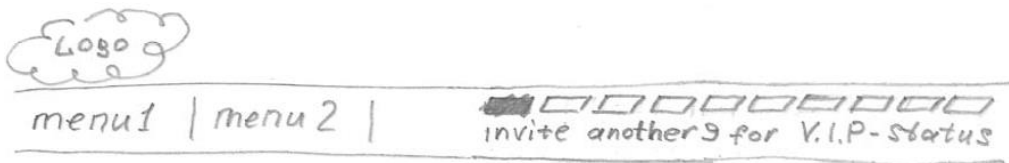


Figure 16. The VIP status progress bar.

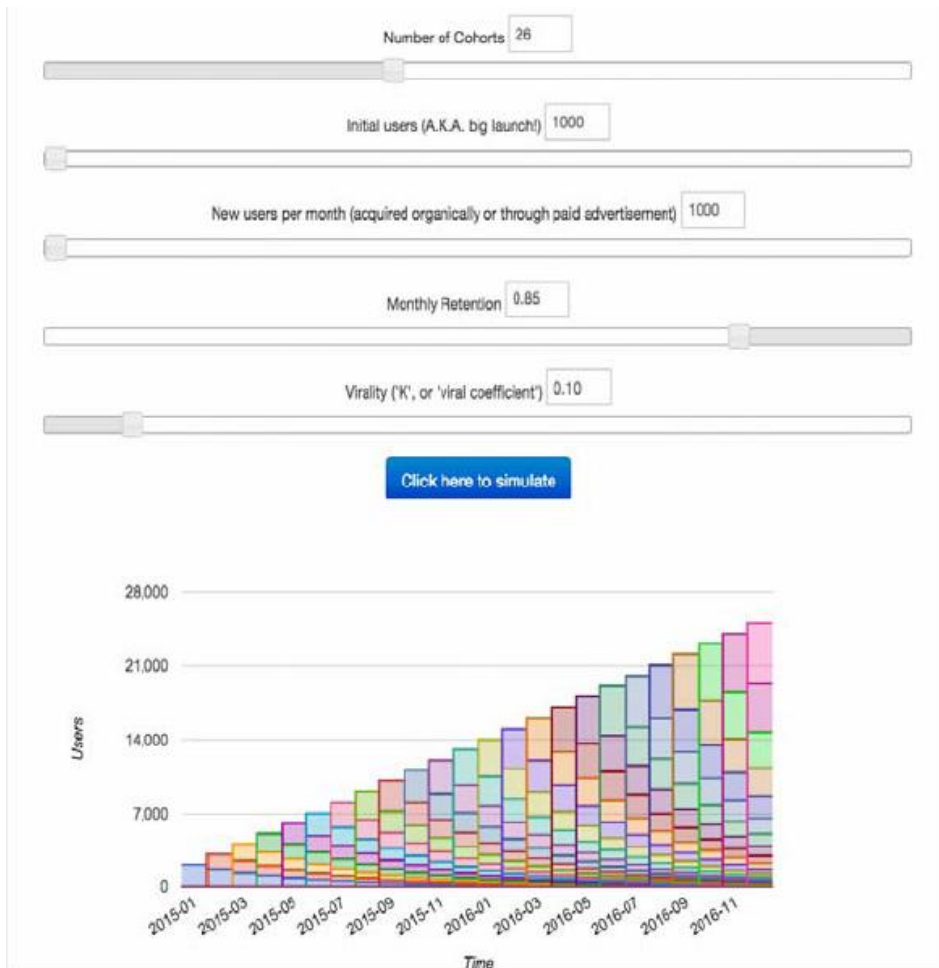


Figure 17. Cohort analysis calculations results.

5. MONETIZATION AS GROWTH MOTIVATOR

Viral growth and monetization can be both competing and complementary mechanisms for the system growth. The i2istudy system, which grew to over 40,000 users, was used to conduct reported experiments and measure corresponding parameters. The user behavior was affected by changing online software system parameters to maximize the number of the system users (Eyal, 2014). Despite the fact that the platform was envisioned as a free application, some monetization elements were stipulated (Skok, 2009a). These paid features are used by a small percentage of users needed to maintain the system.

The authors have studied the statistics of the user behavior in the developed shareware pseudo-free system. While paid features of a typical freemium application are used by 3-10% of users, statistics collected in the i2istudy system was different. From the control standpoint, freemium application is an open system consisting of users and centralized software, which controls human behavior in the system. Herewith, the users are free to participate in the system mechanics or refuse to participate anytime. In our case the purpose of control and

optimization is to maximize the impact of several parameters, which characterize the system. These parameters are the growth of the system user base, reflected by the K-factor, average user time spent in the system over a certain period of time (retention) and system monetization (percentage of paying users and how much they spend).

It is clear that trying to maximize several parameters simultaneously is not a correct approach. Thus, the first objective is to grow the system in terms of the daily or weekly active user and the virality in terms of the K-factor, which reflects how existing users invite new users. The second objective is the system monetization at later development stages when there are enough users. However, the author decided to implement monetization during the system initial growth to study if the existing audience is ready to pay for the premium features.

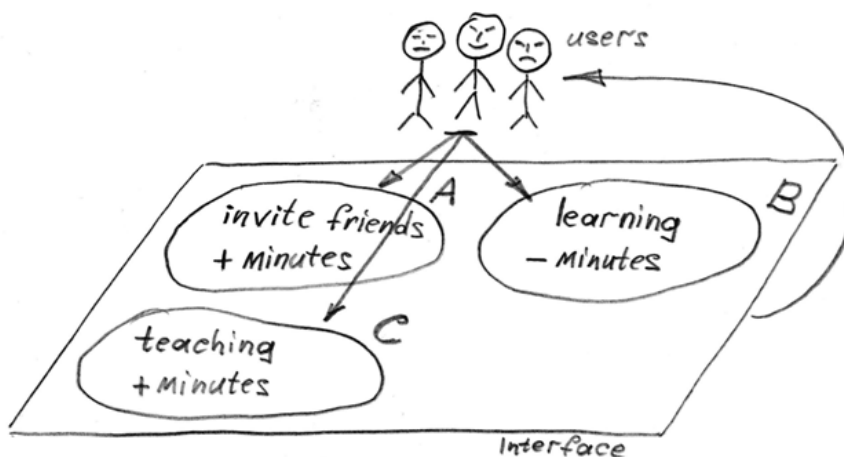


Figure 18. Initial state of the system and mechanisms for spending and getting minutes.

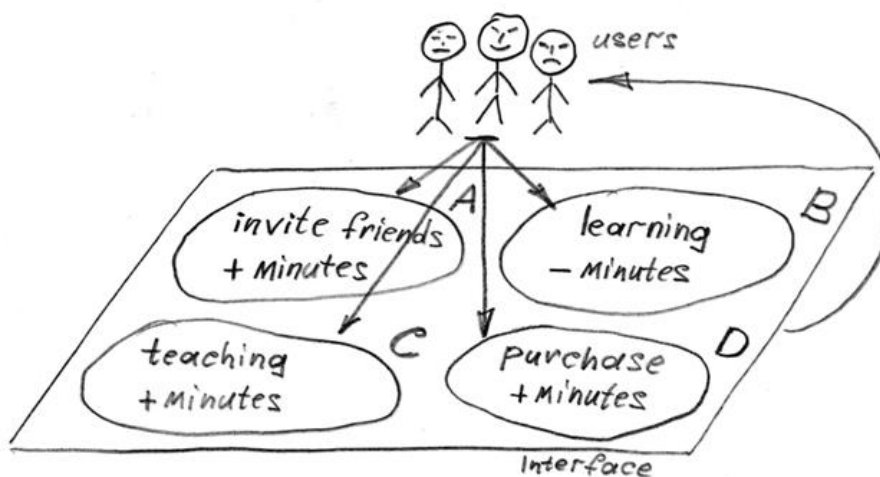


Figure 19. Additional option to purchase minutes.

Time in minutes available to learn foreign languages from native speakers is the system internal currency. Figure 18 shows the diagram of the system before monetization, where users could only earn minutes in the system by inviting friends and teaching other users. The system consists of the user interface and the users. A new feature was added to positively affect user behavior. The hypothesis was that some users would utilize the new feature. If a large percentage of users utilize the new feature by willingly purchasing minutes, the system is monetized quite well. If this percentage is low, the experiment was unsuccessful.

The control mechanism was realized by changing the interface and some programming algorithms to motivate users by a new function. As a result, the system was changed from the state I in Figure 18 to the state II in Figure 19, which includes additional branch of the possible user behavior algorithm to purchase minutes. As mentioned by Seufert (2013), factors, such as virality, gamification and monetization can enhance each other, increasing user involvement, or be antagonistic and compete for user attention. Thus, different behavioral scenarios, labeled A, B, C and D in Figure 19 can either help or interfere with each other, depending on the situation.

In our case, the system interface was utilized to attract user attention to scenarios A, B and C to improve user involvement in the process. Besides, scenarios B and C represent the core cycle of the application, where users spend most of the time teaching and learning from each other. Scenario A is the part of the interface where users can invite friends to expand the user base and receive bonuses (gamification elements to motivate users to certain actions). Curiously enough, monetization (scenario D) can drive virality and retention in terms of acquiring premium features, also available for money, by participating in viral programs to invite friends. The price of these features reflected in real valuable dollars is encouraging users by clearly demonstrating their value. User motivated by the value of the new function reflected in dollars can be easily encouraged to earn it by performing certain actions of inviting friends, for example.

5.1. Monetization Implementation

To test this hypothesis the author added monetization during the second month after the system launch. Users could now purchase minutes in the system using real money in addition to earning minutes by teaching or inviting friends. This new feature was supposed to motivate users to earn more minutes in the system by teaching their native language and inviting friends. These are two available options A and C in Figure 19 to earn system minutes without spending real money. On the other hand, the new feature should have caused real sales, allowing the developers to earn money (Park, 2011). As mentioned earlier, statistics of successful freemium application sales shows that 3-10% of the users purchase premium features (Ellis and Brown, 2014).

However, since the real money feature implementation, only two \$10 sales took place. This is regardless of the fact that about 24,000 users were registered in the system at the time, and 36% of them were involved in the process of spending and earning virtual system currency, minutes (not all user activity in the system results in spending or earning minutes). Thus, only two users were involved in monetization, which is by no means satisfactory for a freemium product. Please keep in mind that the option to purchase minutes was actively

marketed. In particular, special prompts were added to the system interface, along with informing all users of this new feature by email (Cohen, 2014).

However, regardless of the lack of the virtual currency sales, the demand for other ways to earn minutes increased significantly. In particular, users started to send invitations to their friends more actively. They were offered 30 minutes of bonus system time for each invited registered user. User involvement in the teaching process also increased. Additional 8% of the users indicated that they are willing to teach their native language. Before this profile parameter was filled by 47% of the users. This monetization approach resulted in 55% of the users involved in the teaching process. Thus, adding the option to purchase minutes indirectly improved system parameters of virality and retention, but had no effect on monetization.

The authors were particularly interested in how existing users invite their friends, which was assessed by calculating the K-factor. The K-factor is the ratio of the virally attracted new users and active existing users over a certain time. Kim (2000) identified five types of users: visitor, novice, regular, leader and elder. To calculate the K-factor, one could use only the new users (NU), all users during a certain period (U), or only active users (AU). The authors used only active users to get more accurate results, accounting for the users who passed the “membership ritual” (Kim, 2000). Some sources use only novice users as the base, comparing all virally attracted users with all types of users (Kim, 2000; Rigatuso, 2014). The author did not consider this approach, since all active users contribute to virality, not just the novice users. The weekly K-factor was calculated as (Reichheld, 2003):

$$K_{factor}^{weekly} = \frac{wIU}{wAU} \cdot 100\% \quad (11),$$

where wIU is the number of invited users and wAU is the number of active users in a given week.

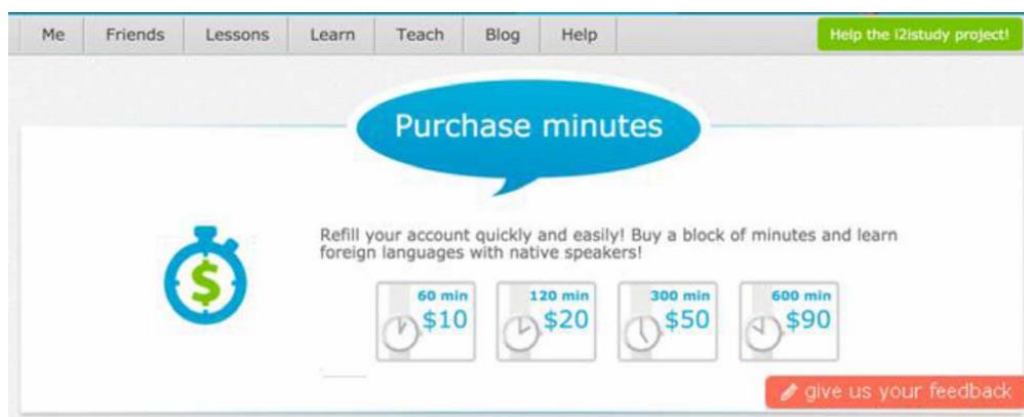


Figure 20. User interface with the option to purchase minutes.

Table 13. Data for K-factor calculations for the i2istudy system

Week:	21.04 - 27.04	28.04 - 04.05	05.05 - 11.05	12.05 - 18.05	19.05 - 25.05	26.05 - 01.06	02.06 - 08.06	09.06 - 15.06	16.06 - 22.06	23.06 - 29.06	30.06 - 06.07	07.07 - 13.07	14.07 - 20.07	21.07 - 27.07	28.07 - 03.08	04.08 - 10.08	11.08 - 17.08	18.08 - 24.08
Weekly Active Users (wAU)			297	801	867	979	1080	1213	1827	2126	1763	2672	2572	1924	1716	1810	1576	947
New Active Users (wNU)			239	575	572	643	695	776	1358	1464	1140	1881	1643	1129	998	1066	824	358
Invited Active Users (wIU)			5	9	10	32	54	81	85	41	73	68	52	65	77	78	52	42
K-Factor = wIU/wAU, %			0.88	1.19	1.29	3.05	3.12	2.22	2.31	2.02	4.37	4.48	2.45	3.41	4.26	4.4	3.39	4.37

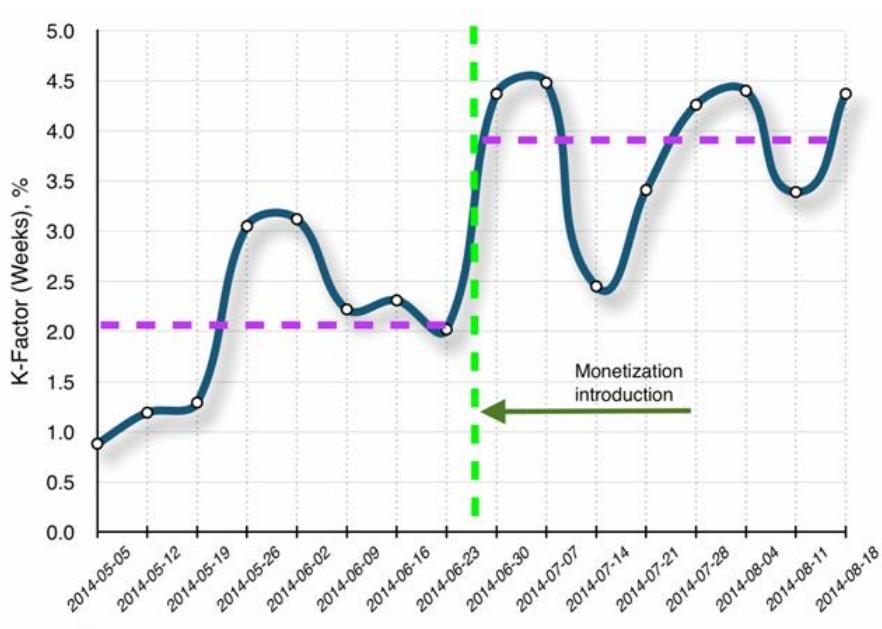


Figure 21. Weekly K-factor changes.

Mass mailing informing users of the opportunity to purchase minutes in the system started on July 28th, 2014. This action caused a spike in the number of sent invitations to get extra 30 minutes in the system for each invited registered user, which affected the weekly K-factor in Table 13 and Figure 21. As seen in Figure 21, the weekly K-factor increased from $2.01 \pm 0.84\%$ to $3.89 \pm 0.73\%$ after the new feature announcement. The K-factor growth continued until the system was closed on September 1st 2014 for renovation.

To test the hypothesis whether the K-factor changed as a result of monetization, statistical analysis was utilized. The null hypothesis was that the weekly K-factor did not change. The K-factor data before monetization were used as the expected values. The actual K-factor data for comparison were taken after monetization. The calculated p-value was 0.01%, thus the hypothesis that the K-factor did not change as a result of monetization was rejected.

5.2. User Feedback and System Development

It is understandable that the offered monetization model did not work, although it positively affected the system overall. The authors decided to leave this monetization available, but only as the motivating factor for users to earn virtual currency by other means. For real monetization the authors plan to utilize other methods. For example, in addition to the virtual system currency in minutes, there will be user accounts with real money, along with the option to learn and teach for real money, based on the user preferences.

In the event that users will choose the option to teach and learn for money, real money will be credited to the teacher account and debited from the student account. The system will take a commission in this case. The opportunity to teach for money will only become available to teachers after a certain number of teaching hours for virtual system “minutes”.

The teacher will also have to have a good ranking generated from the student assessments at the end of each lesson.

These conclusions were reached after asking the system users. The site contains the red sticky button “Give us your feedback” on the bottom of the screen (Figure 20), which is actively utilized by the users. In 6 months the users left 1824 messages in 4 languages. We analyzed the feedback by dividing it into the following groups (Seufert, 2013; Mäntymäki, 2011):

- 36% contained praise and thank you messages, such as: “Thank you, this is cool”;

- 24% asked about how the system works, or had specific questions about the interface;

- 18% related to technical issues with configuring the hardware (the microphone and the camera) and/or inability to establish audio-video connection with other users;

- 11% contained negative feedback in terms of the complaints connected with other users’ behavior, or requests to close their account;

- 8% contained ideas related to teaching only for money and unwillingness or inability to participate in the language teaching time exchange;

- 4% specific suggestions for system development typically associated with adding other languages: Arabic, French, Italian and Ukrainian;

- 35% other unclassified feedback.

Analysis of this feedback and personal communication with the system users lead to a hypothesis that the majority of users prefer to pay for learning languages due to various reasons. They did not want to participate in the time exchange, which looked so appealing to the system developers. Thus, the developers decided to implement real monetization, reflecting natural organic user needs. There are 8% of users who prefer to pay for their studies due to the unwillingness to teach or lack of demand for their native language. These 8% also include users who want to teach their native language for profit, even small. As a result there was a decision made to add the second currency into the system in terms of the real money and allow users to teach for profit. The system will allow adding real money to the system, and getting paid as well.

The initial attempt to monetize system by changing the user interface and adding a new feature affected the system in an unexpected way. Adding the option to purchase internal system currency (minutes) using real money did not result in significant sales, but motivated users to utilize alternative ways to earn this virtual currency. It was expected that the users would either utilize or not utilize this option without changing the system performance parameters. However, this resulted in the unexpected growth in viral mechanics of inviting friends. The rate of attracting new users increased as a result of the offer to purchase virtual currency. Thus it was observed that direct motivation for the certain action within the system was ignored, but changed other indirect parameters (system growth in this case). It is quite clear and obvious that given several alternatives to obtain the virtual currency, the users choose the most advantageous and simple ones for them. However, the viral system parameters improvement just due to the unrealized option to purchase minutes is an interesting and ill studied effect.

CONCLUSION

The authors have developed and implemented freemium real time e-learning system for practicing foreign language speaking skills with native speakers. The idea that two unfamiliar with each other people can carry on a conversation without knowing a common language, guided by a computer program, turned out to be viable. The described platform allows combining high quality lessons and live human interaction with the native speaker. These lessons have been custom developed specifically for the i2istudy system by the professional teachers. The system also facilitates individual tutoring, the most expensive service in the World, without involving real exchange of money, based on the language training barter between the teacher and the student.

Developed application is of interest for the majority of users, and allows maintaining a prolonged dialogue between the users in a given language. This definitely allows developing speech communication skills in a foreign language. Regardless of the stereotype that quality foreign language education can only be provided by the professional teacher, the developed system demonstrates that it is also convenient for users to study together. In this case, similar to the teaching materials presented in a text book, or interactive recorded media, professional teacher is recruited to develop teaching materials, while users can use these materials for training and practice. However, it is more interesting and encouraging doing this with others, since the social effect also gets employed. Based on the conducted experiments, users not only spend more time in the system, but invite their friends to join them.

The authors suppose that similar ways of teaching could partially substitute individual tutoring and/or be used as training to improve oral communication skills. It is concluded that the system should be developed further and recommended as the speech improvement tool. At the same time it is clear that the system is not a good fit for every user, since some people are very shy and cannot communicate with strangers, even when provided with pre-defined communication scenarios.

Conducted studies present the new methodologies to assess gamification tools in the e-learning systems. The developed e-learning system not only allows conducting quality training, but presents an opportunity for statistical analysis of different parameters, contained in the log files, to assess the effectiveness of technical and pedagogical tools. Application popularity with users and growth of the number of users both act as assessment for the system motivation elements and tools.

When building a freemium product, it is wise to take it to the market and to work out the viral and retention mechanics on small volumes of paid audience, since these mechanics can be easily analyzed and statistically evaluated. After achieving adequate F-growth factor, venture capital funds can be attracted, and the project can be brought to a large market.

APPENDIX. A FEW WORDS ABOUT THE I2ISTUDY SYSTEM

What is i2istudy?

This is an international club where people learn foreign languages from each other. i2istudy is the newly developed open educational resource for learning foreign languages

from native speakers. The learning is achieved using pre-defined educational materials through live interaction between the teacher and the student. This is why the system is called i2istudy, “eye to eye”, based on the peer-to-peer principle. The method is based on the patented technology, which allows learning basics of the foreign language from scratch, or enhance foreign language proficiency in a short period of time.

Let’s ask a question: What does every person know and use every day? The answer is obvious - their native language. Thus, every person can be called an expert in his or her native language. However, can any native speaker teach other people? At a first glance, the answer is no, since: a) the teacher needs to know how to teach and b) the teacher needs to know a foreign language to communicate with the student. The i2istudy allows native speakers to teach others without knowing how to teach and without knowing foreign languages. In other words, i2istudy allows all native speakers, not necessarily professional teachers, to teach their native language in a network setting. Every user is the teacher and the student at the same time. As a student the person learns foreign languages, and as a teacher s/he teaches others their native language. The system is based on the latest available web technology.

Why is the Service Currently Free?

Because i2istudy uses the principle of time banking. Here anyone can be a teacher or a student. As a student, you learn the foreign language. As a teacher, you teach your native language. It’s barter! Besides, internal system currency in “minutes” is automatically tracked. It’s like a computer game, which also offers entertainment. A housewife from Florida can teach a student from Argentina for 27 minutes, and then learn Spanish for 27 minutes in return. A man from Berlin can teach his friend from Moscow, who teaches a teenager from Cairo Russian and so on.

How to Learn and How to Teach?

“How to learn - it’s clear! How am I going to teach my native language and prepare lessons? I don’t know how to do it!” - this is the most frequent question that people ask.

You Do Not Need to be a Professional Teacher to Teach Your Native Tongue!

Since every lesson has been thoroughly written out in advance by professional teachers, all the assignments have been prepared, the pictures and videos - selected, the teacher doesn’t need to prepare for the lesson, but simply read the information shown by the system and follow written instructions. That is why the lesson can be conducted by anyone, who speaks the language fluently! This is why only native speakers teach on i2istudy! Moreover, because of the well thought-out system of hints, even a beginner can communicate with a native speaker!

How Can You Earn Money with i2istudy?

Some people say: “I don’t have time for teaching. I only want to learn a foreign language!” or “Why learn other languages? I speak English. It’s enough for me.” If you don’t want to share your time, you can just teach your native language and earn money!

Additional Information

The system interface allows adding any number of languages by simply translating the existing lessons. There is no need to recreate new lessons. All the user needs to do is select the native language and the language to be learned, and learn from native speakers. The system currently supports English, Russian, German and Spanish languages.

In conclusion, i2istudy is the platform, which competes with thousands of online offers to teach foreign languages through Skype.

Business model: users pay each other for learning foreign languages. The project provides a place to find a teacher/student, live communication aids (live audio and video), teaching and learning materials, and billing (time and \$ tracking, paying and getting paid). The project takes commission from money transactions, similar to AirBnB or Uber, but in language education.

More info:

https://www.youtube.com/watch?v=6i_2GPKLEb4

<https://www.youtube.com/watch?v=bbG7PHzBNf4>

<https://www.youtube.com/user/i2istudycom>

<http://www.i2istudy.com>

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Chapter 45

**SECONDARY EFL LEARNERS' EXTRACURRICULAR
L2 CONTACT AND THEIR SELF-BELIEFS
CONCERNING ORAL NARRATIVE COMPETENCIES:
ANALYZING RELATIONS AMONG CONSTRUCTS –
CLARIFYING THE ROLE OF LANGUAGE
PROFICIENCY AND GENDER**

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ABSTRACT

In the EFL context, the learners' extracurricular contact with the L2 is considered both an important goal and a substantial means to develop and optimize their foreign language acquisition. From a cognitive-motivational perspective the extent and intensity to communicate in a foreign language outside the EFL classroom will not only depend on the learners' language skills, but will also be strongly affected by their related self-beliefs. In particular, their perceptions of their own competencies as well as their apprehension concerning the use of the English language should decisively regulate their actual willingness to communicate in the L2. Besides pertinent listening, pronunciation, vocabulary or grammar skills, in particular, the learners' oral narrative competencies and their related self-beliefs, respectively, should claim a central role in determining their L2 contact. However, as previous EFL research could incrementally differentiate L2 competence beliefs and anxieties into several specific subcomponents (such as speaking, reading, or writing beliefs) and could clearly demonstrate the relationships of these sub-components with the foreign language learners' relevant achievement and proficiency levels – the issue of oral narrative competence beliefs and anxieties appears to be barely analyzed. Moreover, little is known about their contribution to explain interindividually existing differences in EFL learners' extracurricular L2 contact. Therefore, the present

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study aims at clarifying these relationships. In a sample of $N = 256$ German ninth-graders from 9 inner-city grammar schools the relations between their related competence beliefs, anxiety, teacher ratings of their relevant L2 skills, and their extracurricular L2 contact were analyzed. For concurrent validation, measures of their L1 and L2 self-concept were also included. Using structural equation modeling method the results could show the learners' L2 contact being directly explained by their self-perceptions of oral narrative competencies, which appeared to be directly affected by their anxiety concerning oral narrative situations. The anxiety variable, in turn, could be directly predicted by the teacher rating of learners' speaking skills. Hence, the L2 speaking skills had no direct impact on the learners' L2 contact, but were sequentially mediated by their oral narrative self-beliefs and their apprehension or fear of failure concerning oral narrative situations. Furthermore, multiple group comparison could demonstrate these relationships among variables to be invariant across gender. Taken altogether, the present findings stress the need for conceptually and methodologically more complex research designs to intensely unravel the developmental pathways and educational effects of EFL learners' extracurricular L2 activities.

INTRODUCTION

In the EFL context, the learners' extracurricular contact with the L2 has to be considered both an important goal and a substantial means to develop and optimize their foreign language proficiency. Correspondingly, Dörnyei and Csizér (2005) point out the learners' language contact outside the foreign language classroom being a key factor in language acquisition – as it offers a wide range of opportunities for using English language in more or less natural communication settings and, thereby, vitally contributes to practicing and enhancing linguistic skills. In particular, from the conceptual perspectives of relevant language acquisition theories the learners' extracurricular contact with the L2 English should be expected to be mostly informal and implicit in nature and, therefore, should allow to facilitate the learners' foreign language use in terms of everyday input experiences and output performance (Krashen & Terrell, 1983; Swain, 1985). That way, the learners should also increasingly advance to internalize the culturally constructed mediating artifacts (or mental tools) of the native speakers' social community (Lantolf & Thorne, 2008). Similarly, from the viewpoint of social psychology, the extracurricular L2 contact should lead to positive changes in the learners' attitudes and behavior concerning the native speakers' community. Following Allport's prominent contact hypothesis (1954) it should be assumed, that the frequency and quality of intergroup contact with L2 speakers would enable the learners to better understand the foreign culture, and, therefore, would opportunely affect their motivational orientations and interpersonal competencies towards L2 native speakers as well as towards their language (Pettigrew & Tropp, 2005). Accordingly, for EFL research the issue of extracurricular L2 contact appears to constitute one important issue which has to be extensively analyzed with regard to these theoretical assumptions. In detail, there is considerable need for empirical clarification of the type of L2 activities outside the EFL classroom learners are preferably engaged in, its individual determinants, its actual effects on foreign language acquisition processes or proficiency outcomes, respectively, and its impact on the learners' foreign language attitudes.

Over the past decades, various studies have already investigated EFL learners' extracurricular L2 contact across most diverse educational settings, learner samples, and cultural

backgrounds. However, they rather differ in the way of conceptualizing and operationalizing the contact variable. Whilst some studies in the field just analyzed the self-reported frequency and quality of direct interactive contact with native speakers outside the foreign language classroom (Clément, Dörnyei & Noels, 1994; Clément & Kruidenier, 1985; Dörnyei & Csizér, 2005; Onwuegbuzie, Bailey & Daley, 1999), other studies additionally included the learners' indirect contact experiences with L2 sources – in particular, by considering their extracurricular exposure to books and newspapers, TV and radio programs, films, video games, music, and internet websites (Barbee, 2013; Bonney, Cortina, Smith-Darden & Fiori, 2008; Cheng, 2002; Csizér & Kormos, 2008a; Dörnyei, Csizér & Németh, 2006; Illes & Csizér, 2010; Kim & Margolis, 2000; Koolstra & Beentjes, 1999; Spada, 1986; Sundqvist, 2009b; Sylvén & Sundqvist, 2012). In most cases, the type and frequency of indirect L2 contact was inquired by means of self-report questionnaires, in single cases also one-week language diaries were used (Sundqvist, 2009b; Sylvén & Sundqvist, 2012). Altogether, those studies which approached to unfold the indirect contact variable conceptually appeared more plausible and empirically yielded more productive results, inasmuch as the majority of EFL learners might experience only minimal opportunities to directly interact with native speakers. Moreover, the exploration of indirect L2 contact sources captures the learners' exposure to relevant cultural products and artifacts of the native speakers' community – which should play a crucial role in the internalization of linguistic and non-linguistic constructs of the foreign culture. Actually, in most studies the learners admitted to have only rare direct language contact and reported a more frequent exposure to indirect contact sources. In particular, outside the EFL classroom they more strongly preferred the use of audio-visual and online media than of print products (Barbee, 2013; Csizér & Kormos, 2008b; Kormos & Csizér, 2007; Sundqvist, 2009b).

Substantially rooted in a cognitive-motivational or social constructivist framework of academic learning (Wigfield, Eccles, Schiefele, Roeser & Davis-Kean, 2006), especially based on a theoretical perspective on the foreign language learning process being essentially determined by the mutual interplay among individual aptitudes, skills and beliefs (Dörnyei, 2005), the relevant studies in the field mostly analyzed the relations of extracurricular L2 contact both with measures of language proficiency and language learning motivation. Across these studies the motivation variables broadly covered the issue of EFL learners' self-beliefs, in particular, their competence and control beliefs as well as their affective (prevalently anxious) appraisals of their individually existing learning experiences – e.g., the learners' self-confidence, perceived competence or self-efficacy, affective and instrumental values, intrinsic learning motivation or motivated learning behavior, and foreign language classroom anxiety (Dörnyei, 1998; Gabillon, 2005; Horwitz, 2001; MacIntyre, MacMaster & Baker, 2001; Williams & Burden, 1997). Furthermore, with regard to the inconsistency of pertinent research findings (Faber, 2013), some studies also examined the role of the learners' gender:

- At all, surprisingly few studies had analyzed the relation between the EFL learners' L2 contact outside the classroom and their foreign language proficiency or achievement outcomes. Two studies could substantiate a positive relationship between secondary learners' exposition to extracurricular L2 sources with their English listening and writing competence, respectively (Vez, Piñeiro & Rodríguez, 2013; Vickov, 2015). The results from two other studies with adult samples could not demonstrate any substantial achievement differences depending on the frequency of extra-

curricular language activities (Barbee, 2013; Spada, 1986). However, considering the effect of playing English worded video games during leisure time, frequent gamers from fifth grade classrooms displayed a higher amount of vocabulary knowledge, reading and listening comprehension (Sylvén & Sundqvist, 2012). Similarly, another study reported significant gains in vocabulary and word recognition for a group of elementary school children watching English TV programs with L1 subtitles. Admittedly, the experimental design of this study was not in line with the research focus on extracurricular language contact (Koolstra & Beentjes, 1999).

- Likewise, only few studies had analyzed the L2 learners' competence beliefs. Their results could demonstrate significant, but low to moderate relations between the amount of extracurricular foreign language contact and the learners' self-confidence, self-evaluation of proficiency or self-efficacy. In turn, the frequency of L2 contact could be significantly explained by the learners' integrative attitudes concerning the foreign language and culture (Clément, Dörnyei & Noels, 1994; Clément & Kruidenier, 1985; Sundqvist, 2009a; Sylvén, 2006).
- With respect to the EFL learners' motivational orientations one relevant study revealed no substantial correlations with their extracurricular language contact (Kim & Margolis, 2000). Compared with this, two studies from the Hungarian EFL context could demonstrate significant motivational differences depending on the frequency of L2 contact. Those learners who reported a higher level of effort, persistence and enjoyment in foreign language learning engaged in extracurricular activities more frequently. Moreover, multivariate analyses could show only direct spoken, not indirect L2 contact to significantly predict the learners' motivated learning behavior (Csizér & Kormos, 2008a,b; Illés & Csizér, 2010).
- Furthermore, just two studies had examined the L2 learners' anxiety with respect to their extracurricular language contact. Whilst one study could demonstrate only a weak relation between the writing anxiety and the frequency of university students' exposure to indirect language sources (Cheng, 2002), the other study could not find any significant relation between L2 contact and the learners' foreign language anxiety (Sundqvist, 2009a).
- Finally, due to the small number of empirical findings, the role of L2 learners' gender remains rather unclear. As one study with eighth-graders could demonstrate the girls reporting a significantly higher frequency of extracurricular L2 contact, other studies with ninth-graders could not find any overall differences between girls and boys. However, interestingly there were significant correlations between extracurricular L2 activities and the learners' oral proficiency and vocabulary measure for the boys, but not for the girls. This special finding possibly might indicate a moderator effect of the gender variable (Sundqvist, 2009b; Sundqvist & Wikström, 2015).

To summarize, in view of the theoretically emphasized importance of EFL learners' extracurricular L2 contact the output of these empirical studies appears to be more or less meager and, in particular, yields very inconsistent information. Moreover, as these studies had been conducted in most diverse educational tracks and cultural backgrounds, they cannot claim having produced any representative results. Their results are not really able to adequately clarify the developmental determinants and educational consequences of EFL learners' ex-

tracurricular language activities. Undoubtedly, first of all there is a need for more research efforts. Moreover, the analysis of extracurricular L2 contact must be refined and relevant investigations should, therefore, generate alternate research perspectives – which should systematically tend to overcome the conceptual and methodological shortcomings of the present studies.

Accordingly, future research should be more strongly guided by sound conceptual frameworking which allows for integrating currently well evidenced models of language learning and language learning motivation and, thus, might warrant a nomologically embedded consideration of the extracurricular L2 contact variable. In EFL research appropriate empirical analyses are already available – e.g., modeling the multiple associations among several aptitude, proficiency, and motivation or anxiety variables (Clément & Kruidenier, 1985; Gardner, Masgoret & Tremblay, 1999; Gardner, Tremblay & Masgoret, 1997; Khodadady & Khajavy, 2013; Pae, 2008; Peng & Woodrow, 2010; Piniel & Csizér, 2013). Hence, empirical analyses of the learners' extracurricular L2 contact should follow these conceptual and methodological features and specifically modulate them. Merely bivariate analyses will not reflect the structural and processual complexities of construct relations and, therefore, are potentially at risk to leave important information undiscovered or to misread given information (Howitt & Cramer, 2011). Only the multivariate modeling of the L2 contact variable's relations with the learners' language competencies and motivational orientations will adequately contribute to unravel the developmentally and educationally relevant pathways among constructs (Gardner, 2000) – by scrutinizing the L2 contact variable's multiple dependencies on relevant competence and motivation constructs as well as its multiple effects on relevant competence and motivation constructs.

In particular, the multivariate modeling of relations allows for exploring and analyzing potential mediator and moderator effects among variables (Baron & Kenny, 1986). Thus, the direct and indirect impact of different learner variables on the frequency and quality of their extracurricular L2 activities and, in turn, its direct and indirect impact on the learners' competencies and motivational orientations might be identified. Correspondingly, in a multivariate study with eighth-graders learning German as a foreign language Csizér and Kormos (2008b) could substantiate an indirect impact of their self-confidence on the frequency of their L2 contact outside the classroom. Similarly, an earlier study of Clément and Kruidenier (1985) could evidence the mediating role the language learners' extracurricular L2 contact in explaining their motivational orientations. In each case, these mediator effects appear to vitally differentiate and specify the modeling of construct relations under consideration.

Furthermore, even though appropriate multivariate research efforts will analyze the EFL learners' extracurricular language contact, they essentially should pay more attention to the issue of causal interpretation. With reference to the input and output hypotheses of relevant language acquisition theories (Krashen & Terrell, 1983; Swain, 1985), previous research in the field had, in most cases, implicitly assumed the L2 contact variable to operate as an antecedent variable affecting the learners' competencies and motivational orientations. However, as the relations between L2 contact and learner variables must be principally expected to be reciprocal in nature, the extracurricular contact variable conceptually and empirically should be treated both as an independent and dependent construct. In particular, the later research perspective might contribute to gain important insights into interindividually existing differences among EFL learners and, thus, might help to clarify relevant linguistic and motivational precursors of their actually realized extracurricular L2

activities. The identification and analysis of such personal determinants should, in turn, conceptually and empirically enhance the understanding of L2 contact effect modalities. Up to now, only in rare cases relevant studies had investigated the L2 contact variable that way (Clément & Kruidenier, 1985; Csizér & Kormos, 2008b).

Another crucial problem of the causal interpretation of research findings concerns the study design's temporal feature. Strictly speaking, only the analysis of longitudinal data allows the relations among constructs to be causally interpreted. Accordingly, research on EFL learners' extracurricular language contact should be prospective in nature and, thus, should assess its relevant data at two measurement times, at least. Previous research in the field, however, had used cross-sectional data. Hence, its results cannot make any claims regarding the direction of relations among constructs. Nevertheless, the conceptual interpretation of cross-sectional data could be substantially elaborated by using *a priori* predictions of construct relations. Cross-sectional studies on EFL learners' extracurricular language activities should benefit from a theoretically comprehensible framework being proper, in each case, for the development of reasonable hypotheses about the assumed direction of relations between the contact variable and related competence or motivational variables. Certainly, this conceptually arguable approach to test explicit hypotheses about the direction of construct relations will lead to an interpretation of cross-sectional data in terms of theoretically derived perspectives within a given framework and, thereby, will help to examine relevant elements of theoretical models – but it will never compensate or even substitute the scope of longitudinal analyses.

Likewise, an important issue of EFL research on the learners' extracurricular language contact refers to the level of construct specificity. If at all, previous studies in the field mostly had analyzed relevant competencies by means of various test instruments measuring specific skills such as vocabulary and oral fluency (Spada, 1986; Sundqvist, 2009b; Sundqvist & Wikström, 2015), or reading and listening comprehension (Sylvén & Sundqvist, 2012). Compared with this, their measurements of relevant motivational orientations operated on a general level of construct specificity – e.g., by analyzing the L2 manifestations of language attitudes, competence beliefs (Clément & Kruidenier, 1985; Csizér & Kormos, 2008b; Dörnyei, Csizér & Németh, 2006; Sundqvist, 2009a), intrinsic motivations (Barbee, 2013; Csizér & Kormos, 2008b; Illes & Csizér, 2010; Kim & Margolis, 2000), and anxieties (Clément, Dörnyei & Noels, 1994; Onwuegbuzie, Bailey & Daley, 1999; Sundqvist, 2009a). Only in one study, the learners' language anxiety had been assessed on a task-specific level (Cheng, 2002). However, against the background of conceptual and empirical developments in educational psychology (Lau, Yeung, Jin & Low, 1999; Marsh & O'Mara, 2008a; Mills, Pajares & Herron, 2006) and foreign language research (Cheng, Horwitz & Schallert, 1999; Dörnyei, 1998; Ehrman, 1996; Julkunen, 2001) the EFL learners' motivational orientations must be considered multidimensional or multifaceted in nature and, therefore, should be operationalized in a more task- or situation-specific manner – e.g., with respect to distinct subcomponents of cognitive-motivational self-beliefs about a certain linguistic competence (such as listening, reading, writing, or speaking). As these specific subcomponents had been demonstrated to be stronger associated with relevant competence or proficiency measures than overall indicators of L2 motivation, they were able to relatively explain a higher amount of variance in construct relations under investigation (Cheng, 2004; Holder, 2005). Thus, previous studies on EFL learners' extracurricular language activities might have achieved less differentiated

findings. In particular, they might have been prone to potentially underestimate the associations among contact and motivation variables.

Moreover, future research efforts on EFL learners' extracurricular language contact should more strongly consider the role of gender. Though most previous studies in the field could not sufficiently clarify this issue, two studies, at least, could indicate the learners' gender to moderate the L2 contact variable's relations with relevant competence and motivation variables (Sundqvist, 2009a,b; Sundqvist & Wikström, 2015). This potential moderation effect, which possibly might be a result of gender stereotyping in the formation of language competencies and motivations (Meece, Glienke & Askew, 2009; Rätty, Kasanen & Kärkkäinen, 2006; Schmenk, 2004) as well as in the choice and maintenance of foreign language activities outside school, should further be examined. In particular, multivariate analyses conducting multiple group comparisons (Kline, 2011) between male and female learners, should advance in determining the role of gender. Apart from this special methodological perspective, in order to gain more consistent and representative results, EFL research in the field should consider the gender variable throughout.

Not least, as previous studies in the field had analyzed the issue of extracurricular L2 contact across most diverse learner samples and educational settings (ranging from secondary school to university level), their results hardly appear to be comparable and, consequently, cannot warrant to reveal any representative information. Probably, adolescent secondary school and adult university students' motivation to learn a foreign language will emerge from rather different individual and contextual determinants and, hence, will not reflect the construct in the same manner. From a developmental perspective, more comprehensive analyses within a certain educational context are needed. Only their findings should allow for drawing valid conceptual and empirical inferences with regard to the EFL learners' extracurricular language activities in a given academic, social, and cultural environment (Dörnyei, 2009).

EXTRACURRICULAR L2 CONTACT AND LEARNERS' SELF-BELIEFS: CONCEPTUALIZING THEIR RELATIONS

EFL research had mostly considered the learners' extracurricular language activities as an independent variable which was expected to positively affect their language competencies and attitudes or motivational orientations, respectively. In order to clarify the individually and contextually operating factors which may contribute to the learners' actually realized extracurricular L2 activities the reverse research perspective should feature just as important. In particular, it should help to analyze the impact of the learners' language competencies and motivational orientation on the choice of certain contact sources and the intensity using them in everyday situations. Principally, it may be assumed that learners' who have achieved a relatively high proficiency level and, therefore, also have evolved a stronger motivational willingness to engage in foreign language communication, would like to more frequently and more intensely get involved with extracurricular L2 sources. However, as relevant empirical findings could demonstrate, achievement or competence variables and motivational orientations will not independently or equally contribute to explain interindividually existing differences in subsequent learner variables. Instead subsequent learner variables will be

directly predicted by motivational orientations, which, in turn, appear to be directly affected by achievement or competence variables (Ahmed, Minnaert, Kuyper & van der Werf, 2012; Clément & Kruidenier, 1985; Faber, 2012a,b). Hence, within a given conceptual framework of construct relations the impact of individual achievement or competence variables should be largely mediated by the learners' motivational orientations. Such mediator effects are in line with the assumptions of social cognitive or social constructivist theories – which concordantly emphasize the crucial role of subjective appraisals, expectancies or interpretations in determining academic learning processes (Bandura, 2001; Pintrich, 1999; Wigfield, Eccles, Schiefele, Roeser & Davis-Kean, 2006; Williams & Burden, 1997; Zimmerman & Cleary, 2009).

Accordingly, the construct of motivational orientations requires further conceptual clarification. From a social cognitive perspective it refers to the learners' self-beliefs such as their subjective expectancies, explanations, and values of academic activities and outcomes (Wigfield & Eccles, 2002). As outlined elsewhere (Faber, 2012a), they substantially concern the individually emerged perceptions of competence and control with respect to a certain educational setting. Developmentally, they can be understood both as consequences of previous academic experiences and as antecedents of future academic outcomes (Pintrich, 2003). Theoretically, they can be defined as expectancy-value constructs which predict to a large extent how an academic situation is being either approached or avoided. Therefore, they considerably contribute to regulate the learners' individual engagement and learning behavior in the long term (Wigfield, Eccles, Schiefele, Roeser & Davis-Kean, 2006; Zimmerman & Cleary, 2009).

Among these self-beliefs, the learners' academic self-concept has been evidenced as a cognitive-motivational key variable. In terms of self-perceptions and self-evaluations of own competencies, it is assumed to be multifaceted in nature and to be comprised of distinct sub-concepts or components – which refer to the learners' competence beliefs in a certain academic domain, subject, or with respect to a certain type of academic task. Accordingly, in numerous educational and psychological studies these domain- or subject-specific self-concept facets could be empirically separated (Marsh & O'Mara, 2008a; Marsh, Xu & Martin, 2012). Across most diverse research designs and learner samples, they have been consistently demonstrated to explain a higher amount of achievement variance than general measures of academic self-concept or global self-esteem (Möller, Pohlmann, Köller & Marsh, 2009; Valentine, DuBois & Cooper, 2004).

Furthermore, in the case of individually accumulated failure experiences in a certain domain, subject or type of task, the learners' relevant self-concepts will decline and, thus, indicate lowered competence beliefs or success expectancies – which will, in turn, lead to increasingly emerging expectancies of personal threat. The learners, then, will fear not to master the task at hand and anticipate inevitable failure. These biased expectancies of failure outcomes may manifest as individually noticeable worry and avoidance cognitions, negative emotional states, and feelings of physiological arousal (Liebert & Morris, 1967) – and, thus, will eventually bring the formation of persisting test anxieties (Faber, 2012a; Zeidner, 1998). Likewise, individually established anxieties are assumed to negatively affect the level of competence beliefs as well. That way, decreasing self-concepts and increasing anxieties must be considered as mutually reinforcing risk factors which might seriously impair the learners' academic development and attainment in the long term. In particular, high-anxious learners suffer from reduced working memory capacities, engage more strongly in task-irrelevant thoughts

during task completion and, in total, tend to use less adaptational coping strategies (Ikeda, Iwanaga & Seiwa, 1996; Richards, French, Keogh & Carter, 2000; Schwarzer, 1996; Zeidner, 1998). As the learners' competence beliefs will be processed in a domain- or subject-specific manner, their test anxieties also will. Correspondingly, the construct validity of domain- or subject-specific test anxiety measures had been well documented – e.g., with regard to test anxiety in mathematics, spelling, science, computer use, and sport (Beckers & Schmidt, 2001; Britner, 2010; Faber, 2012a; Güzeller & Doğru, 2012; Ko & Vi, 2011; Sparfeldt, Schilling, Rost, Stelzl & Peipert, 2005; Smith, Smoll, Cumming & Grossbard, 2006). Moreover, some studies could further unfold the construct and identify distinct subcomponents within a certain domain or subject (Gierl & Bisanz, 1995; Pajares & Urdan, 1996; Wigfield & Meece, 1988).

The formation of academic self-concepts and anxieties, however, does not only depend on the learners' success or failure experiences but also on their gender – thus, leading to more or less pronounced differences between males and females in a certain academic domain or subject. In the mathematics and science domain, males consistently reported higher self-concepts. Even when existing achievement differences were statistically controlled for, these differences favoring the male learners remained (Hergovich, Sirsch & Felinger, 2004; Skaalvik & Skaalvik, 2004; Wilgenbusch & Merrell, 1999). In the verbal domain, gender differences are less clear. Though empirical findings mostly could evidence females to display significantly higher verbal competencies, this advantage did not appear to be consistently associated with higher levels in their self-concepts (Hergovich, Sirsch & Felinger, 2004; Jacobs, Lanza, Osgood, Eccles & Wigfield, 2002; Skaalvik & Skaalvik, 2004; Wilgenbusch & Merrell, 1999). In particular, these findings might indicate the ruminative effects of gender role stereotypes on the females' motivational processing (Baron, Schmader, Cvencek & Meltzoff, 2014; Pomerantz, Altermatt & Saxon, 2002). Similarly, significant anxiety differences could be demonstrated between male and female learners. Across a wide range of learner samples, educational settings, and cultural backgrounds females reported a higher level of test anxiety (Bandalos, Yates & Thorndike-Christ, 1995; Hembree, 1988; Seipp & Schwarzer, 1996; Zeidner, 1998).

In EFL research, the empirical analysis of the learners' motivational orientations concerning their extracurricular language activities should broadly follow these conceptual issues and, consequently, build a domain-specific framework of relevant construct perspectives – in particular, considering the domain- or task-specific differentiation of L2 self-concepts, test anxieties, and their relations to the learners' gender.

L2 Self-Concepts

According to the assumption of a multidimensional and multifaceted self-concept construct (Marsh & O'Mara, 2008a) the domain-specific validity of self-concept measures in the EFL context had been widely proven. The L2 self-concepts could be demonstrated being sufficiently distinguishable from the competence beliefs in other academic areas (Faber, 2012b; Holder, 2005; Marsh, Kong & Hau, 2001; Möller, Streblow, Pohlmann & Köller, 2006; Rost, Sparfeldt & Schilling, 2007). Furthermore, empirical findings could separate L2 self-concept variables from other subject-specific facets of academic self-concept. They also could demonstrate them to correlate with various performance variables in a domain-specific manner (Marsh, Kong & Hau, 2001; Möller, Streblow, Pohlmann & Köller, 2006; Onwueg-

buzie, Bailey & Daley, 2000a; Rost, Sparfeldt & Schilling, 2007). However, a large part of previous EFL research likewise had analyzed the learners' academic self-perceptions in various aspects but used a rather wide array of construct conceptualization and operationalization modes. Though these variables at least a posteriori may be interpreted as merely rough indicators of L2 learners' academic competence beliefs, their relationships to relevant performance and proficiency measures turned out to be low to moderate in magnitude. Compared with the correlational findings of recent self-concept research (Möller, Pohlmann, Köller & Marsh, 2009), these results seemed to underestimate the relations between self and achievement variables – a fact that might be attributed to such methodological limitations as they may arise from biased study samples, lacking control of confounding variables, and the use of less differentiated composite scores or highly aggregated construct features (Clément, Dörnyei & Noels, 1994; Clément & Kruidenier, 1985; Dörnyei & Kormos, 2000; Gardner, Tremblay & Masgoret, 1997; Tremblay & Gardner, 1995). However, apart from these methodological caveats, the L2 self-concept construct could be further differentiated into distinct subcomponents which refer to the perception of listening, speaking, reading, and writing performance (Holder, 2005; Laine, 1988; Lau, Yeung, Jin & Low, 1999; Mori, 2002; Rahimi & Abedini, 2009). Hence, in order to analyze the learners' L2 self-concept in a most proper and valid way, EFL research should pursue this conceptual approach and examine the construct both on the level of general and task-specific components.

L2 Anxiety

In coping with foreign language demands, learners with low competence expectations commonly should experience a higher degree of language apprehension and, thus, begin to foreseeably develop an increasing fear of negative social evaluation, cognitive worry and emotional tension, which in turn can contribute to a longer-term stabilization of a sustainably unfavorable learning behavior (Horwitz, Tallon & Luo, 2010; MacIntyre & Gardner, 1989). Numerous studies had been able to prove substantial relations between L2 self-concepts and foreign language anxiety variables. These findings could confirm once more the conceptual affinity and processual interplay between both constructs, therefore also the domain-specific nature of foreign language anxiety (Goetz, Cronjaeger, Frenzel, Lüdtke & Hall, 2010; Marsh & Yeung, 1996; Matsuda & Gobel, 2004; Sparfeldt, Schilling, Rost, Stelzl & Peipert, 2005). L2 learners' language anxiety could still be empirically separated from a general test anxiety variable (Horwitz, 2001). It only moderately correlated across different foreign languages and was associated with significantly lowered language outcomes (Al-Shboul, Ahmad, Nordin & Rahman, 2013; Gardner, 2007; MacIntyre & Gardner, 1994; Rodriguez & Abreu, 2003; Sparfeldt, Schilling, Rost, Stelzl & Peipert, 2005). As several studies dealing with the L2 learners' willingness to communicate (MacIntyre, 1994; MacIntyre, Clément, Dörnyei & Noels, 1998; MacIntyre, MacMaster & Baker, 2001) could show, it comparably appeared to contribute to individually existing differences in everyday language use. However, the willingness to communicate in a foreign language could be substantially predicted by the learners' self-confidence and anxiety scores – indicating this construct to represent a causally subsequent composite which mediates the motivational consequences of competence and threat expectancies. Therefore, its conceptual uniqueness should be further clarified (Hashimoto, 2002; MacIntyre & Charos, 1995). With regard to distinguishable subcomponents of the

foreign language anxiety construct, EFL research had first and foremost examined the degree of emotional tension and fear of failure in L2-typical speech and oral communication situations (Brantmeier, 2005; Gkonou, 2014; Horwitz, 2001; Kim, 2009; McCroskey & Richmond, 1991; Subaşı, 2010; Williams & Andrade, 2008; Woodrow, 2006; Young, 1986; Wilson, 2006) but could meanwhile also integrate the learners' fears of reading and writing or interpretation requirements into their analyses – and, thus, had also been advanced to empirically support this further differentiation (Cheng, 2002; Cheng, Horwitz & Schallert, 1999; Chiang, 2006; Elkhafaifi, 2005; Mills, Pajares & Herron, 2006; Saito, Horwitz & Garza, 1999; Zoghi & Alivandivafa, 2014). However, relevant measures of foreign language anxiety occasionally fail to adequately reflect the essential worry and emotionality components which processually will constitute the test anxiety construct (Deffenbacher, 1980; MacIntyre, 1999). Future EFL research in the field should pay more attention to this issue. Here again, EFL research dealing with the motivational analysis of L2 learners' extracurricular language activities should examine the anxiety construct both on the level of general and task-specific components.

L2 Proficiency, Self-Beliefs and Gender

Across most diverse grade levels and educational tracks the female students consistently displayed better outcomes in learning English as a foreign language than male students (Hartig & Jude, 2008; Huerta, Tong, Irby & Garza, 2012; Lehmann, Gänsfuß & Husfeldt, 2011; Gu, 2002; Nikolova, 2011; Schilling, Sparfeldt & Rost, 2006; Winkelmann & Groeneveld, 2010; Zaunbauer, Retelsdorf & Möller, 2009). However, whilst some studies reported significant self-concept differences favoring the female language learners (Dörnyei & Clément, 2001; Dörnyei, Csizér & Németh, 2006; Du, 2012; Heinzmann, 2009; Henry, 2009; Schilling, Sparfeldt & Rost, 2006), other studies could demonstrate only minor or no gender differences in the L2 self-concept – even when the females clearly outperformed their male classmates (Daniels, 2008; Faber, 2012b; Helmke, Schrader, Wagner, Nold & Schröder, 2008; Holder, 2005; Krätschmar, 2010; MacIntyre, Baker, Clément & Donovan, 2002; Skaalvik & Skaalvik, 2004; Yeung, Lau & Nie, 2011; Zaunbauer, Retelsdorf & Möller, 2009). Compared with this, research results on the L2 anxiety and the willingness to communicate construct draw a much more confusing picture. As some studies could demonstrate the females to report stronger as well as lower anxieties (Campbell & Shaw, 1994; Öztürk & Gürbüz, 2013; Park & French, 2013), other studies could not substantiate any gender differences (Matsuda & Gobel, 2004; Onwuegbuzie, Bailey & Daley, 2000b; Woodrow, 2006). Moreover, in one particular study the males' higher anxiety appeared to interact with grade level (MacIntyre, Baker, Clément & Donovan, 2002). In principle, this inconsistency of research findings might be largely traced back to conceptual and methodological characteristics of studies and, in particular, on relevant differences among learner samples under consideration. For instance, the impact of gender might vary with the learners' age and their educational context. Hence, the gender-dependent formation of foreign language anxieties will probably differ between compulsory school and university students. To unravel these complexities with regard to the analysis of L2 learners' extracurricular language activities, EFL research should consider the moderating role of gender affecting the interplay among competence and self-belief variables.

Modeling the Relations among L2 Constructs

Against this domain- and task-specific background of conceptual perspectives and empirical findings, the L2 learners' extracurricular language activities will be analyzed as a dependent variable within a framework of relevant competence and self-belief variables. The learners' self-beliefs are represented as task-specific competence beliefs and anxious worry and emotionality responses. According to a cognitive-motivational perspective of construct relations, it is assumed the L2 contact variable being strongly affected by task-specific competence beliefs and anxieties, which will, in turn, be directly affected by related language competencies (Figure 1). In EFL research, similar mediator effects of self-belief and anxiety variables have been already evidenced elsewhere (Clément & Kruidenier, 1985; Faber, 2012b; Khodadady & Khajavy, 2013; Peng & Woodrow, 2010; Piniel & Csizér, 2013), but with respect to the L2 contact variable they seem to be mostly neglected, so far. The contribution of self-belief and anxiety variables to explain interindividually existing differences in extracurricular language activities, however, allows to generate a twofold set of research hypotheses: On the one hand, individually accumulated success or failure experiences may lead to the formation of positive or negative competence beliefs concerning a specific task or demand, which predict the individual level of anxiety. On the other hand, individually accumulated success or failure experiences may lead to the development of task-specific anxieties, which directly predict the level of competence beliefs. Conceptually, both directions may claim to adequately realize the construct relations under consideration (Figure 1) – though the hypothesis of a direct impact from competence beliefs on subsequent anxieties is in line with assumptions from social-cognitive theory and, moreover, has been empirically supported in various studies (Faber, 2012a; Goetz, Frenzel, Hall & Pekrun, 2008; Goetz, Pekrun, Hall & Haag, 2006; Tóth, 2007; Yashima, 2002; Yashima, Zenuk-Nishide & Shimizu, 2004). In any case, among L2 competence beliefs and anxieties mediation effects should operate and, thus, largely explain interindividually existing differences in the learners' extracurricular language activities. Correspondingly, the learners' L2 proficiency level, namely their specific language competencies concerning a particular academic task or demand, will not directly affect the L2 contact variable (Figure 1). That is, L2 learners will more frequently and intensely use extracurricular language sources if they perceive themselves as relatively competent – and, besides, if they suffer from negative feelings of language apprehension and test anxiety only to a minor extent.

Finally, within this modeling perspective of construct relations, the learners' gender might contribute to explain interindividually existing differences in their extracurricular L2 activities both in a direct and indirect manner. First of all, the learners' gender appears to directly affect the relevant competence, self-belief and contact variables by engendering mean differences. Thus, females and males should significantly differ with respect to the level of their task-specific competence, their perceptions of task-specific competencies, their task-specific worry and emotionality responses, and their frequency of extracurricular language activities (Figure 1).

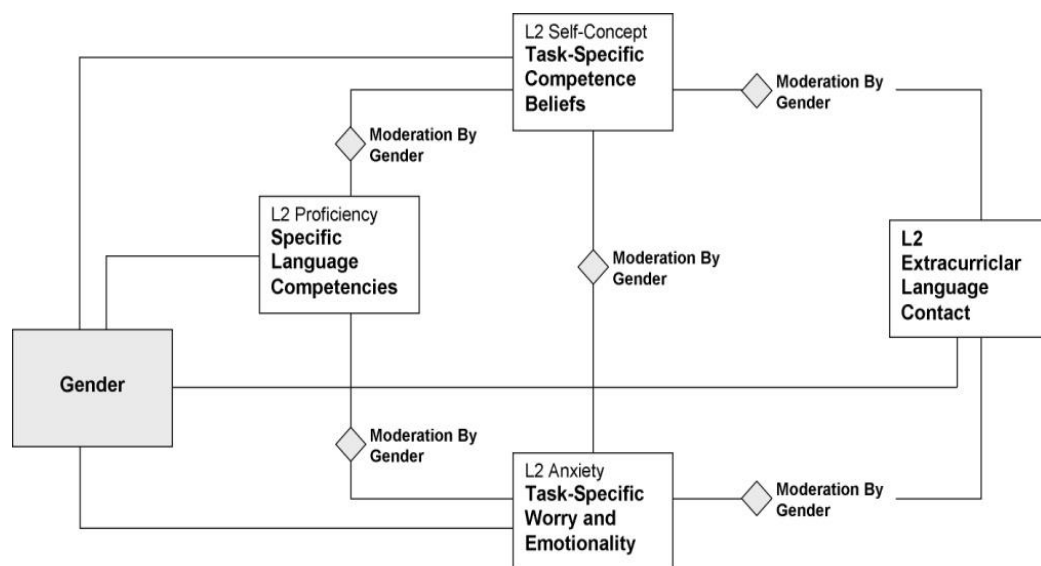


Figure 1. Theoretically assumed model of construct relations.

However, due to the ambiguous research results in the field, the direction of gender differences is hardly to predict. Hence, concerning this issue the modeling of construct relations will be rather explorative in nature. Furthermore, subtle gender differences might also emerge as a result of a motivational bias. As female learners commonly are more likely to perceive themselves defensively and were more likely to discount their competencies (Bornholt, Goodnow & Cooney, 1994; Stetsenko, Little, Gordeeva, Grasshof & Oettingen, 2000; Stipek & Gralinski, 1991; Tiedemann & Faber, 1995), they are more prone to internalizing and ruminative reactions in the face of academic failure (Broderick, 1998; Crosnoe, Riegle-Crumb & Muller, 2007; Frenzel, Pekrun & Goetz, 2007; Kiuru, Leskinen, Nurmi & Salmelo-Aro, 2011). Accordingly, female learners reported internal distress primarily after academic failure to a significantly greater extent than male learners (Pomerantz, Altermatt & Saxon, 2002). Therefore, those research findings which could not demonstrate any gender differences in L2 self-beliefs might be explained by a typically operating gender bias in the cognitive-motivational processing of individually experienced failure. Only at the same (poor) achievement level females would display comparatively weaker competence beliefs and higher anxieties than their male counterparts. Thus, the possible impact of gender bias in L2 self-beliefs should depend on the learners' individual achievement or proficiency level – at least, previous analyses could substantiate this effect with respect to the L2 self-concept and the anxiety concerning oral narrative classroom situations (Faber, 2012c, 2013). Additionally, the learners' gender will indirectly affect the relevant construct relations by moderation. Between females and males, the relations among constructs will then significantly differ in their magnitude and (possibly) their direction (Figure 1). Hence, such correlational differences would reflect empirically distinct pathways to explain females' and males' extracurricular L2 activities – confirming the particular findings of Sundqvist (2009b), the role of foreign language competencies and self-beliefs would turn out to create a gender-specific pattern in predicting the preference and the use of extracurricular L2 sources. Developmentally, the fact of a gender-dependent pattern determining the relations among constructs would inevitably

address the clarification of relevant socialization effects far beyond the matter of foreign language use (Meece, Glienke & Askew, 2009; Rätty, Kasanen & Kärkkäinen, 2006; Williams, Burden & Lanvers, 2002).

THE PRESENT STUDY

Oral Narrative Competencies and Extracurricular L2 Contact

With regard to the domain- and task-specific conceptualization of L2 learners' competencies and self-beliefs, a considerable research gap still exists in the analysis of their extracurricular language activities. Anyhow, as previous EFL research in the field had considered task-specific constructs only in rare cases – in particular, oral narrative competencies and related self-beliefs had not yet been investigated. Though oral narrative competencies in the EFL context are considered both an advancing language goal and an increasingly important medium of language instruction (Celce-Murcia, Dörnyei & Thurrell, 1995), no suitable empirical findings are available. This fact must be all the more surprising as EFL research could almost point out, that L2 learners generally perceive the demands of oral language use as highly apprehensive and threatening (Awan, Azher, Anwar & Naz, 2010; Aydin, 2008; Brantmeyer, 2005; Dörnyei & Kormos, 2000; Koch & Terrell, 1991; Liu & Jackson, 2008; Mercer, 2011; Philipps, 1992; Tanveer, 2007). All the more, this issue will apply to oral narrative situations.

Producing appropriate oral narratives in the foreign language requires a wide range of the learners' linguistic and non-linguistic skills. They must have elementary language skills (such as pronunciation and vocabulary), conversational skills (such as cohesion and coherence), actional skills (such as expression of feeling and reporting relevant information), and strategic skills (such as self-monitoring and self-regulating behavior). In a narrow sense, EFL learners must intentionally use these competencies to produce successful oral narratives (Celce-Murcia, Dörnyei & Thurell, 1995). In order to achieve an appropriate level of coherent storytelling, they need to actively leverage various linguistic, affective, cognitive and narrative tools – e.g., considering the causal sequence of the story told, offering adequate orientation clues to the audience, or evaluating the narrative content by means of affective markers as well as speaking fluently or pronouncing words correctly (Pavlenko, 2006; Ruhm, 2014).

Furthermore, the learners' oral narrative productions will be performed within a certain social setting and will therefore be publicly evaluated by the audience's attentiveness and feedback. Over time, L2 learners will experience their oral narratives being successful or failing and thus will develop specific self-beliefs. They will perceive themselves as more or less capable to tell stories, and they will evaluate the narrative situation as more or less apprehensive or even threatening (MacIntyre, 1999; Zeidner, 1998). Hence, L2 learners will gradually develop self-relevant perceptions of their own narrative competencies and anxious expectancies – e.g., due to their individually existing worry to confound the causal ordering of narrative elements or their fear to pronounce incorrectly. These task-specific self-beliefs will, in turn, regulate their approach to narrative activities either in a more mastery-oriented or in a more failure-avoiding way. Accordingly, L2 learners will considerably differ in their perceptions of oral narrative competencies and their anxiety concerning oral narrative

situations. In previous analyses, both variables had been demonstrated to be associated with relevant L1 and L2 constructs in a domain-specific manner. In line with conceptual assumptions, they appeared, moreover, to strongly correlate. Within a framework of related competence and self-belief constructs the learners' anxiety concerning oral narrative situations was directly affected by their foreign language competencies and, in turn, could significantly predict their self-perceptions of oral narrative competencies (Faber, 2012c). Poor achieving language learners are more prone to worry about their mastery of narrative situations and, thereby, to primarily expect narrative or communicative failure outcomes.

Interindividually existing differences in these task-specific self-beliefs should, then, also affect the learners' extracurricular L2 contact. Depending on their oral proficiency level they will more or less suffer from anxious feelings and lowered competence beliefs concerning oral narrative situations and correspondingly engage in foreign language activities outside the classroom. In particular, high anxious learners should tend to use L2 sources less frequently – and should, especially, tend to avoid types of L2 direct contact which require either spoken or written modalities of interactive language use.

OBJECTIVES OF THE STUDY

Due to this emphasized lack of appropriate empirical research in the field, the present study aims at analyzing the relations of L2 learners' task-specific competencies and self-beliefs with their extracurricular language activities. Following Csizér's and Kormos' (2008a) conceptual approach, these activities concern both direct and indirect types of L2 contact. In the course of a broader research project with regard to the characteristics and determinants of oral narrative competencies at the end of the secondary school level (Faber, 2009; Ruhm, 2014), measures of relevant competence beliefs, anxious responses and competencies in the L2 were drawn on. To sufficiently clarify their domain-specific validity, correspondent self-belief and competence measures for the L1 German were additionally included. From this discriminant validation perspective, the oral narrative competence and self-belief variables in the L2 should sufficiently claim domain-specificity when their correlations among each other would turn out to be distinctly stronger than with the matched L1 variables. Only with this premise, the analysis of construct relations would adequately reflect the EFL context. Furthermore, the students' gender was considered.

In particular, the present study addresses the following issues concerning the L2 learners' extracurricular language activities:

- First of all, the frequency of the learners' exposure to the L2 extracurricular sources under consideration shall be analyzed and, thus, related preferences in using these sources shall be explored.
- Frequencies and preferences in the use of L2 sources shall be further analyzed with respect to gender differences.
- For subsequent analyses, by calculating a composite score of all relevant items a L2 contact scale shall be built and psychometrically examined.
- The statistical fit of a structural model of construct relations, with the task-specific competence and self-belief measures as independent variables and the L2 contact

measure as dependent variable (Figure 1) shall be tested. Accordingly, in this model perspective it is assumed the L2 contact variable being directly affected by the learners' perceptions of oral narrative competencies and their anxiety concerning oral narrative situations. Both self-belief variables, in turn, are expected to be directly affected by the learners' L2 competencies, whereas there will be no direct relation between the L2 competencies and the L2 contact variable. Similarly, a general L2 self-concept variable is assumed not to be substantially related to the L2 contact variable. Among the L2 competence variables oral skills shall best predict the L2 contact variable. Not least, within this modeling approach the matched L1 competence and self-belief variables are hypothesized to play no crucial role in explaining the L2 contact variable.

- Further, potentially moderating effects of the learners' gender on relations among constructs shall be analyzed.
- With regard to differentially emerging gender differences, it is assumed the females reporting less frequent extracurricular L2 contact in the high anxiety and the low competence belief group, respectively, than their male counterparts.

METHOD

Participants

The study was conducted with a sample of $N = 256$ students (144 female, 112 male) from 20 ninth-grade grammar school classes of a large urban catchment in Germany. In the German tripartite system of strongly selective educational tracks this school type ("Gymnasium") is the highest track. The students' average age was 15.0 years ($SD = 0.5$), ranging from 14 to 16 years. Their participation was on a voluntary basis and only with explicit parental consent. The predominant majority of participating students ($N = 222$) declared themselves to be born in Germany. With respect to the English and German achievement measures, the students who were not born in Germany did not significantly differ from the other students (t-tests for independent samples: $p > .05$). The number of students stating English to be their family language was $n = 1$ (0.4%) and, thus, negligibly small.

Procedure

The L2 contact and both the L2 and L1 self-belief data were gathered in the course of two class periods by two (advanced collegiate) test supervisors who had been instructed in detail prior to the beginning of the test. This took place class for class and in the absence of the teaching staff. The L2 and L1 competence data were collected by the teaching staff in charge with corresponding questionnaires.

Instruments

For assessing the learners' extracurricular L2 activities eight four-point rating items were used. They referred to the frequency (ranging from "never" to "often") the learners' commonly were exposed to certain sources of direct and indirect language contact outside school (Table 1). Against the background of relevant empirical findings, these items mainly dealt with indirect contact types – in particular, various print, mass and internet media. In order to get an appropriate composite scale for further analyses, with all contact items a principal component analysis was conducted. Due to the eigenvalues ($e_1 = 2.587$, $e_2 = 1.157$, $e_3 = 0.947$) its result revealed a clear one-factor solution explaining 32.33% of total variance. However, as two items were deleted because of insufficient item-test-correlations, the final scale consisted of 6 items (Table 1). Its internal consistency calculated with Cronbach's coefficient alpha turned out to be just acceptable (Table 2).

The L2 learners' task-specific self-beliefs were assessed by means of an 18-item questionnaire. Its items were supposed to reflect the typical demands of narrative classroom situations, and to contain corresponding statements with respect to the narrative process as regards content and linguistics (Faber, 2012c). In particular, the competence-related items were phrased relating to the logical structuring of narrative content, the availability of appropriate linguistic means, the context-dependent certainty in narrative skills, and the effect upon the audience.

Table 1. L2 extracurricular contact items: Results of principal component analysis

In my leisure time (or in my vacancies)...	a	h^2	r_{it}
L2CON 01 I visit English-speaking countries.	.338	.666	.207
L2CON 02 I use English language at home or with friends.	.590	.502	.424
L2CON 03 I watch TV news in English language.	.664	.446	.475
L2CON 04 I read books or journals in English language.	.592	.355	.396
L2CON 05 I watch English-speaking films.	.695	.532	.497
L2CON 06 I hear radio programs in English language.	.446	.222	.286
L2CON 07 I visit English-speaking websites.	.508	.619	.315
L2CON 08 I mail or chat in English language.	.627	.400	.447

Note. a = factor loading, h^2 = communality, r_{it} = corrected item-total correlation

The anxiety-related items addressed the central component of worry and emotionality as well as corresponding avoidance cognitions. The answers to the questionnaire items were given by marking a six-point Likert scale (ranging from "does not apply at all" to "applies in full"). The results of principal component analysis led to the formation of two subscales. Eleven items could be used to build the subscale for measuring the learners' perceived oral narrative competencies (PONC). Sample item: "It's easy for me to find the right words immediately." Learners with high scores perceived themselves to be sufficiently capable of conveying the respective narrative content in a consistent, linguistically adequate, and certain

manner. Seven items could be used to build the subscale for measuring the students' worry and emotionality concerning oral narrative classroom situations (WEOS). Sample item: "I feel quite uncomfortable that others are listening to me." Learners with high scores perceived these situations as rather threatening and expected failure to master them. Hence, they reported a higher degree of avoidance thoughts. For both subscales, the internal consistencies turned out to be rather adequate (Table 2). Contrary to the PONC scale, the sum scores of the WEOS scale appeared to be not normally distributed and displayed a clear positive skew (Table 2). Thus, by trend, relatively fewer learners reported higher levels of anxiety – which fundamentally corresponded to the theoretically expected distribution of this variable.

Table 2. Descriptive statistics, reliabilities (Cronbach's alpha), and standard errors (SE) for all scales measuring the learners' self-beliefs, L2 extracurricular contact, and language competencies

	AM	SD	z_{skewness}	z_{kurtosis}	α	SE
SCL2E	58.5	14.7	-2.9	-1.7	.94	3.6
SCL1G	60.3	13.9	-2.7	-1.5	.92	3.9
PONC	41.4	9.6	1.5	0.3	.88	3.3
WEOS	20.9	8.9	2.1	-2.8	.90	2.8
L2CON	13.3	3.2	0.7	-0.1	.70	1.8
TCRL2E	28.7	6.4	0.1	-1.5	.95	1.4
TCRL1G	29.3	6.4	-1.0	-0.9	.95	1.4

Note. SCL2E = Self-Concept in English, SCL1G = Self-Concept in German, PONC = Self-Perceptions of Oral Narrative Competencies, WEOS = Worry and Emotionality Concerning Oral Narrative Classroom Situations, L2CON = Extracurricular Contact with L2, TCRL2E = Teacher Competence Ratings in the L2 English, TCRL1G = Teacher Competence Ratings in the L1 German

The academic self-concepts in the L2 English and the L1 German were gathered using 14 six-point Likert items for each language. They addressed the extent of the learners' subjective competence expectancies with regard to meeting academic demands. The wording of the items was strictly parallel. No explicit social or dimensional comparisons were verbalized. Sample item: "I try hard in English/German, but I do not perform very well." In the majority, these questionnaire items originate from pertinent time-tested scales, and they were presented here in the economical grid style format (Faber, 2012b; Möller, Streblow, Pohlmann & Köller, 2006; Rost, Sparfeldt & Schilling, 2007). A principal component analysis (with varimax rotation) confirmed a two-factor solution allowing for a clear distinction between both subject-related self-concept facets. It was possible to form two scales for measuring subject-specific academic self-concepts whose internal reliability was highly sufficient, in each case (Table 2). High scale scores indicated the learners' positive perceptions and evaluations of their own subject-specific competence which also included sufficient numbers of options of dealing with challenges and difficulties turning up in the process (Faber, 2012c).

The results of an additionally conducted confirmatory factor analysis using three item parcels (Bandalos, 2002) showed an appropriate fit of the measurement model ($\chi^2/df = 1.211$, TLI = 1.00, CFI = 1.00, RMSEA = 0.029).

Concerning relevant L1 and L2 competence aspects, the respective teaching staff was asked to complete a questionnaire concerning the students' proficiency level in the L2 English and the L1 German. For each subject, the items tapped the learners' skills in listening, speaking, pronunciation (L2 only), reading, spelling, grammar, and composition (Faber, 2009). In terms of principal component analysis (with varimax rotation), these subject-specific competence ratings could clearly be separated. Both factors could explain nearly 80% of the total variance. The internal reliabilities of both scales appeared to be highly sufficient (Table 2). The learners' gender was included as a dummy variable (coding: male = 1, female = 2) in the analyses.

Data Analyses

First of all, for analyzing the frequencies and preferences of the learners' exposure to extracurricular L2 sources, overall descriptive statistics were calculated. With regard to all contact items gender differences were examined as well – using two-sample t-tests (Ruxton, 2006). In order to adequately control familywise Type I error rate, the alpha level for determining statistical significance was adjusted with Bonferroni's correction (Abdi, 2007). Additionally, for all pairwise comparisons Hedges' g (1982) was calculated as effect size which pools the n -weighted standard deviations of each subgroup under consideration (Durlak, 2009).

To further test the assumptions concerning the relations among constructs (Figure 1), multivariate analyses were conducted by means of the structural equation modeling (SEM) approach. With SEM method it was possible to control the covariations between all variables with respect to their empirical overlap, thus unraveling the complexity of their relationships (Kline, 2011). For determining the relations among latent variables as well as between manifest and latent variables standardized beta-weights were calculated. The overall fit of the model, hence the discrepancy between the theoretically assumed model structure and the empirically received data, was estimated with various fit parameters. Following conventional rules of thumb in structural equation modeling, a sufficient model fit should be achieved when the χ^2/df value is lower than 3, the Tucker-Lewis index (TLI) is higher than .90, the comparative fit index (CFI) is higher than .90, and the root mean square error of approximation (RMSEA) is at least lower than .08 (Marsh, Hau & Gravson, 2005). As manifest measurement indicators the related scale items, in the case of the L2 English and L1 German self-concept variables as well as the L2 English and L1 German teacher ratings of language competencies two item parcels were used (Bandalos, 2002). Due to the non-normal distribution of the WEOS outcomes, bootstrapped estimations of standard errors for all parameters were used to obtain approximately unbiased significance values (Nevitt & Hancock, 2001; West, Finch & Curran, 1995). The conceptually hypothesized model of construct relations was examined by conducting three sequential steps of analysis: at first, the relations of L2 English and L1 German competence and self-belief variables with the L2 contact variable were simultaneously examined – in order to test the subject-specificity of foreign language variables. As the self-concept items in each subject were all identically worded, the

error terms between the English and German latent variables were allowed to correlate (Marsh, Martin & Debus, 2001). Secondly, relations among all L2 variables were examined – in order to test possible mediator effects of task-specific competence beliefs and anxiety responses. Thirdly, these relations were further examined considering, in particular, the role of the L2 speaking variable to explain interindividually existing differences in the L2 contact variable. Moreover, this final analysis was performed as a multiple group comparison – in order to examine the potentially moderating role of gender. All SEM analyses were conducted with the AMOS software (Arbuckle, 2011; Byrne, 2010).

And finally, to further clarify possible gender differences in the L2 contact variable, and also to explore potential nonlinear relations, two-way analyses of variance (ANOVA) with the learners' gender and self-beliefs as factor variables for the L2 contact scores as dependent variable were calculated. Moreover, to uncover potentially existing differences in the learners' L2 contact among these self-belief groups post hoc multiple comparisons should be performed – using the Scheffé test which appears to be the most flexible and robust, though rather conservative procedure (Kirk, 1982).

L2 contact differences between females and males within each self-belief level should, then, be analyzed with two-sample Welch t-tests (Ruxton, 2006). Here again, relevant difference hypotheses should be tested against an alpha-corrected level of significance (Abdi, 2007).

Among the L2 contact items, the self-belief items and the teacher competence ratings there were only few missing data (amounting at most to 4.3%). As these missings did not produce any systematic pattern they were treated as “missing at random” (MAR). For the structural equation modeling analyses they were automatically compensated by means of the full information maximum likelihood estimation procedure (FIML) available from the AMOS software (Enders & Bandalos, 2001). For all other analyses, missing values were estimated by means of the two-step iterative EM algorithm (Enders, 2010). Though this method appears to be at risk to underestimate the standard errors of imputed data, in view of the small number of missing values, its application seemed to be just advisable.

RESULTS

L2 Extracurricular Contact: Frequencies and Preferences

Initially calculated descriptive statistics of the L2 contact items could demonstrate websites and films being the most preferred extracurricular language sources – followed by reading books or journals and mailing or chatting (Table 3). Apparently to a lesser extent, the remaining contact types were used.

The direct contact with native speakers or, at least, English speaking people was rarely reported. The same applied to watching TV news in English language. However, watching TV news might tap an activity adolescent learners would like to neglect in general. According to that, the L2 learners obviously preferred indirect language sources outside school. Only in the case of mailing or chatting they were needfully involved in interactive contact situations. In particular, the learners' use of this type of L2 contact should reflect its important role in everyday peer culture.

Table 3. Frequencies, standard deviations, and ranking order of the L2 extracurricular contact items

In my leisure time (or in my vacancies)...	AM	SD	Rank
L2CON 01 I visit English-speaking countries.	1.99	0.92	5
L2CON 02 I use English language at home or with friends.	1.90	0.85	6
L2CON 03 I watch TV news in English language.	1.86	0.89	7
L2CON 04 I read books or journals in English language.	2.40	0.90	3
L2CON 05 I watch English-speaking films.	2.55	0.95	2
L2CON 06 I hear radio programs in English language.	1.52	0.81	8
L2CON 07 I visit English-speaking websites.	3.04	0.93	1
L2CON 08 I mail or chat in English language.	2.00	1.06	4

Note: AM = arithmetic mean, SD = standard deviation

Table 4. Gender differences concerning L2 extracurricular contact items and the L2 extracurricular contact total sum score

In my leisure time (or in my vacancies)...	Males AM	Females AM	t	p	g
L2CON 01 I visit English-speaking countries.	1.87	2.08	-1.76	.080	0.23
L2CON 02 I use English language at home or with friends.	1.87	1.92	-0.48	.634	0.06
L2CON 03 I watch TV news in English language.	1.99	1.75	2.17	.031	0.27
L2CON 04 I read books or journals in English language.	2.09	2.63	-4.87	.000	0.62
L2CON 05 I watch English-speaking films.	2.59	2.51	0.64	.525	0.08
L2CON 06 I hear radio programs in English language.	1.50	1.55	-0.55	.583	0.06
L2CON 07 I visit English-speaking websites.	3.40	2.75	5.86	.000	0.74
L2CON 08 I mail or chat in English language.	2.30	2.15	1.10	.271	0.14
L2CON Scale (total sum score) Items 02, 03, 04, 05, 07, 08	13.44	13.11	0.79	.427	0.10

Note. AM = arithmetic mean, t = t-value, p = significance (2-tailed), g = Hedges' effect size. Only p-values in bold face meet the adjusted alpha level ($\alpha' = .006$).

L2 Extracurricular Contact: Gender Differences

In order to get most differentiated results, gender differences in the learners' extracurricular L2 contact were analyzed considering both the level of items and the total scale score. Using pairwise t-tests for independent samples only two items indicated differences between female and male learners, which met the alpha-adjusted level of significance (Table 4). As a result, females more frequently reported to read books or journals in English language – and males more frequently stated to visit English-speaking websites. With respect to the total score of the L2 contact scale, no significant gender difference could be found.

Correlations among Constructs

For the total sample zero-order correlations among constructs revealed a clear subject-specific pattern. Among each other, the L2 competence and self-beliefs appeared to be closer associated than with the concurrent L1 variables (Table 5). As conceptually expected, the sum scores of both the perceptions of oral narrative competencies and the anxiety concerning oral narrative classroom situations did not represent constructs independent from each other. Rather, their sum scores turned out to be substantially correlated. Furthermore, the learners' extracurricular L2 contact was much stronger related to the L2 self-concept and the self-perceptions of oral narrative competence than with the L1 self-concept – thus, indicating the criterion validity of these scales. However, the same did not comparatively hold for the anxiety scale. In particular, this special finding might hint at a relevant mediator effect.

Modeling Overall Construct Relations

In order to comprehensively test the hypothesized relations among constructs (Figure 1) structural equation modeling analyses were conducted. For all measurement models, which were used the analyses, the standardized regression coefficients of manifest indicator variables turned out to reach most acceptable values and were all statistically significant (Table 6).

In a first step, the contribution of L2 and L1 competence and self-concept variables to explain interindividually existing differences in the learners' L2 contact variable were examined – thus, testing the subject-specific validity of constructs. The SEM result could demonstrate the L2 contact variable being exclusively predicted by the L2 self-concept variable. The L2 self-concept variable was, in turn, strongly affected by the L2 competence variable. Path coefficients across subjects did not play any role. The relations among latent variables clearly drew a subject-specific pattern. This model fitted the data in a quite acceptable manner (Figure 2). Accordingly, the L2 contact variable actually reflected a foreign language context rather than a more general scenario of the learners' extracurricular language activities. However, within this model of construct relations, its empirical variance could be explained only to a limited extent.

Table 5. Zero-order correlations among the self-belief, L2 extracurricular contact, and competence variables

	SCL1G	PONC	WEOS	L2CON	TCRL2E	TCRL1G
SCL2E	.38***	.69***	-.59***	.28***	.58***	.35***
SCL1G		.33***	-.27***	.10	.34***	.67***
PONC			-.67***	.38***	.48***	.26***
WEOS				-.19**	-.42***	-.24***
L2CON					.19**	.02
TCRL2E						.53***

Significance: *** $p \leq .001$, ** $p \leq .01$

Note. SCL2E = Self-Concept in English, SCL1G = Self-Concept in German, PONC = Self-Perceptions of Oral Narrative Competencies, WEOS = Worry and Emotionality Concerning Oral Narrative Classroom Situations, L2CON = Extracurricular Contact with L2, TCRL2E = Teacher Competence Ratings in the L2 English, TCRL1G = Teacher Competence Ratings in the L1 German

Table 6. Standardized beta-weights for the measurement models of latent self-belief, L2 extracurricular contact, and competence variables

SCL2E	SCL1G	PONC	WEOS	L2CON	TCRL2E	TCRL1G
.905	.913	.881	.791	.455	.943	.974
.958	.926	.908	.615	.538	.964	.934
		.810	.795	.522		
			.652	.664		
			.865	.467		
			.802	.510		
			.759			
Item Parcels	Item Parcels	Item Parcels	Items 1-7	Items 2-5, 7-8	Item Parcels	Item Parcels

All standardized beta-weights are significant ($p \leq .001$).

Note. SCL2E = Self-Concept in English, SCL1G = Self-Concept in German, PONC = Self-Perceptions of Oral Narrative Competencies, WEOS = Worry and Emotionality Concerning Oral Narrative Classroom Situations, L2CON = Extracurricular Contact with L2, TCRL2E = Teacher Competence Ratings in the L2 English, TCRL1G = Teacher Competence Ratings in the L1 German

In a second step, the contribution of all L2 variables to explain interindividually existing differences in the learners' L2 contact variable was examined. As the SEM result could show, the L2 contact variable was most strongly affected by the learners' perceptions of oral narrative competencies. They could be, in turn, best predicted by their anxiety concerning oral narrative classroom situations. Both task-specific self-belief variables were directly affected by the L2 competence ratings. Thus, the impact of learners' language competencies on their extracurricular language activities was essentially mediated by their task-specific self-beliefs.

With regard to the L2 self-concept variable a rather similar pattern of relations could be found. Though it was not associated with the L2 contact variable and could not incrementally contribute to explain its empirical variance. In terms of the level of construct specificity, this finding was completely in line with conceptual assumptions. Here again, the model fitted the data in a quite acceptable manner (Figure 3).

In a third step, in order to further differentiate the modeling of construct relations, the role of the L2 speaking variable to explain interindividually existing differences in the L2 contact variable was examined. The speaking variable referred to the teacher perception of learners' competence to use free speech in the EFL classroom. This particular modeling perspective was also used to test the potentially moderating effect of the learners' gender. Correspondingly, a multiple group analysis was driven – thus, comparing an unconstrained moderator model and a fully constrained invariance model. The results of this multigroup analysis could not substantiate a significant difference between models ($\Delta df = 48$, $\Delta \chi^2 = 61.977$, $p = .085$). Hence, the invariance model could best fit the data (Figure 4) – suggesting the construct relations not to be moderated by the learners' gender. Rather the magnitude and directions of relations among constructs turned out to be equal either for females and males.

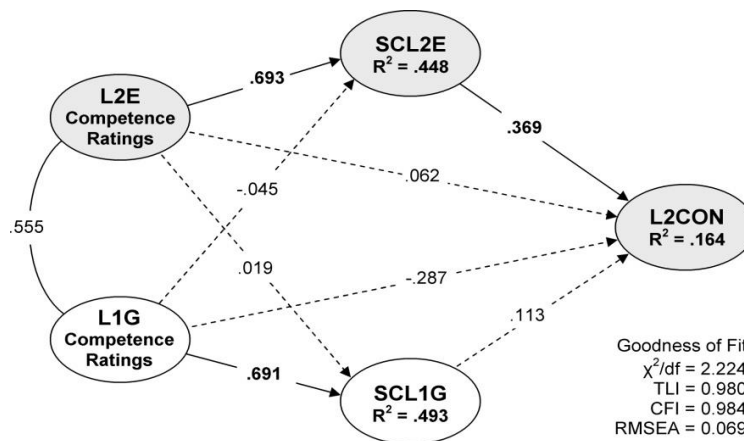


Figure 2. Structural equation modeling results for the relations of L2 English (L2E) and L1 German (L1G) competence and self-concept (SC) variables with the L2 extracurricular contact (L2CON) variable (R^2 = squared multiple regression coefficients). Solid lines represent significant ($p \leq .05$), dashed lines nonsignificant path coefficients.

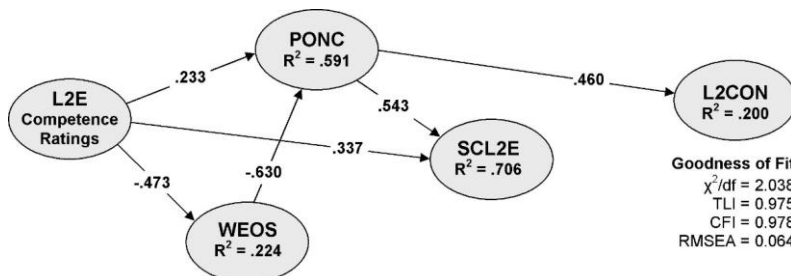


Figure 3. Structural equation modeling results for the relations of the L2 English competence, self-concept (SCL2E), L2 narrative competence belief (PONC) and anxiety (WEOS) variables with the L2 extracurricular contact (L2CON) variable (R^2 = squared multiple regression coefficients). Only significant standardized beta-weights ($p \leq .05$) are reported.

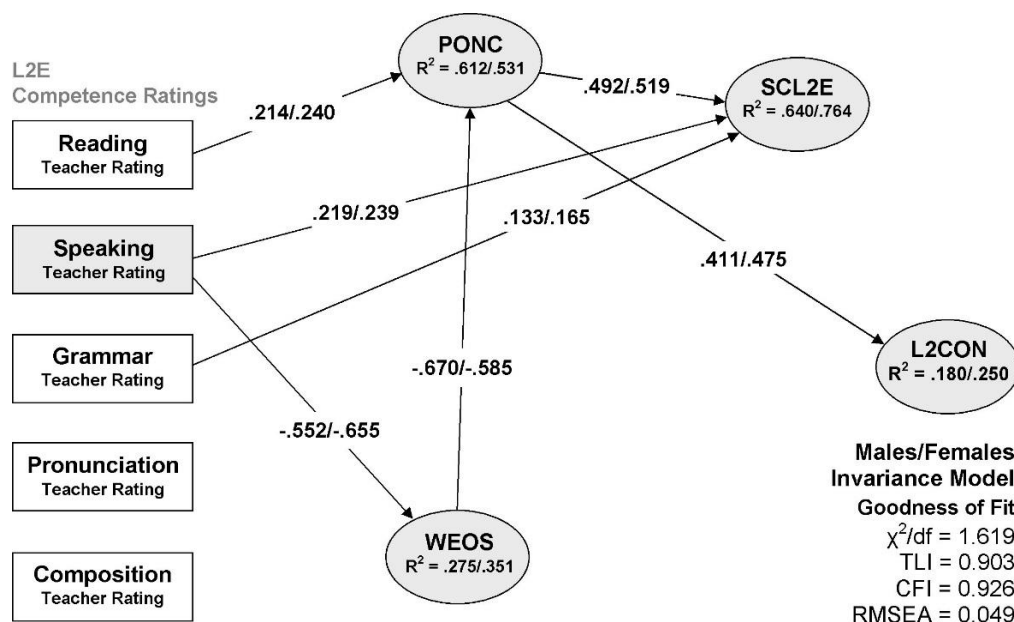


Figure 4. Structural equation modeling results for the relations of diverse task-specific L2 English competence, L2 English self-concept (SCL2E), L2 narrative competence belief (PONC) and anxiety (WEOS) variables with the L2 extracurricular contact (L2CON) variable (R^2 = squared multiple regression coefficient). Only significant standardized beta-weights ($p \leq .05$) are reported.

Within this modeling perspective, the impact of teacher ratings of L2 speaking skills on the learners' extracurricular L2 activities was strongly mediated by their task-specific self-beliefs variables. Here again, the effect of the learners' anxiety concerning oral narrative classroom situations on their extracurricular L2 activities was essentially mediated by their perceptions of oral narrative competencies. Thus, the relations among constructs appeared to be typically determined by a twofold mediation process operating on the level of task-specific self-beliefs.

Additional Analyses of Gender Differences

Finally, for unraveling the potential effect of learners' gender beyond correlational results, a 3×2 analysis of variance (ANOVA) was run with the task-specific self-beliefs and gender as independent factor variables and the extracurricular L2 contact as dependent variable. Both the perceptions of oral narrative competencies and the anxiety concerning oral narrative classroom situations were factorized using their empirical tertiles, thus, leading to the identification of subgroups with low, average, and high self-beliefs. As the results could demonstrate, with regard to the L2 contact variable there were no gender differences between self-belief groups. Neither a significant main effect of the gender nor of the self-belief variables could be found. The same applied to relevant interaction effects (Table 7).

**Table 7. Effects of task-specific self-beliefs and gender on L2 extracurricular contact:
Results of two-way analyses of variance**

Extracurricular L2 Contact				
Factor Variables	df	F	p	η^2
Gender	1,255	0.996	.319	.004
Anxiety Concerning Oral Narrative Classroom Situations	2,255	2.044	.132	.016
Gender $\times$ Anxiety	2,255	0.068	.935	.001
Gender	1,255	1.871	.173	.007
Self-Perceptions of Oral Narrative Competence	2,255	1.812	.166	.014
Gender $\times$ Self-Perceptions	2,255	1.586	.207	.013

Note. df = degree of freedom, F = F-value, p = probability, η^2 = partial eta squared (effect size)

Likewise, post hoc multiple comparisons using the Scheffé test did not reveal any significant result. Furthermore, though in the subgroup with low self-perceptions of oral narrative competencies the females apparently reported a lesser frequency of extracurricular L2 activities (Figure 5), this difference did not meet the alpha-adjusted level of probability ($p \leq .017$) and failed to reach statistical significance. Hence, the hypothesized internal distress effect in the female group with lowered self-beliefs could not be supported.

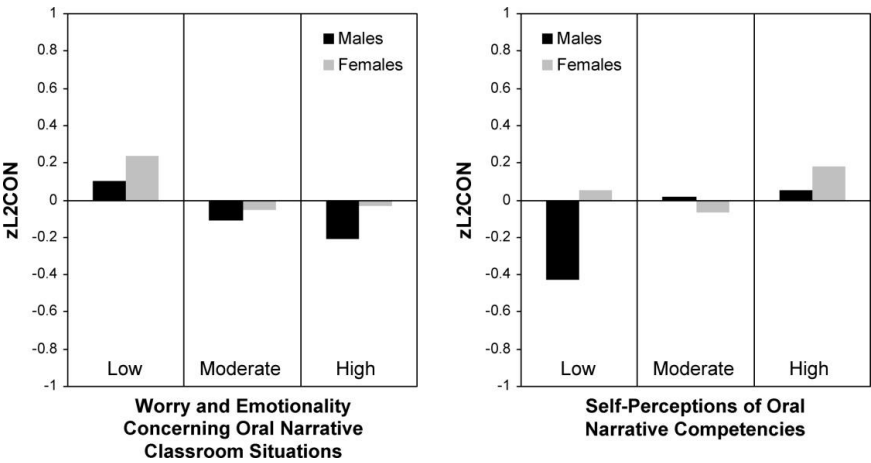


Figure 5. Differences in the L2 extracurricular contact variable dependent on gender and task-specific self-beliefs.

CONCLUSION

With regard to L2 learners’ preferences in using extracurricular language sources, the results of the present study widely confirm, first of all, relevant findings from current EFL

research (Barbee, 2013; Csizér & Kormos, 2008a). In the secondary school sample under consideration the ninth-graders prevalently reported to be exposed to indirect types of language activities – in particular, concerning their everyday contact with modern mass and internet media. Only in the case of mailing or chatting, which appeared to take a moderate frequency of usage, they may occasionally experience interactive situations – and, thus, are sufficiently stipulated to produce explicit language output (Swain, 1985). However, these results cannot clarify at all the meaning of the L2 learners' contact preferences with respect to their actual language acquisition. This issue could be appropriately investigated only by means of longitudinal research designs. Furthermore, as a limitation of the results, the present study has dealt with several direct and indirect contact types, which do not consider the learners' extracurricular language activities in the most differentiated and exhaustive way. Following the conceptual features of relevant studies, future analyses should extend the sources of L2 contact outside school – e.g., by adding the learners' exposure to music media or video games (Barbee, 2013; Csizér & Kormos, 2008a; Sundqvist, 2009b; Sylén & Sundqvist, 2012). Correspondingly, in order to gain most differentiated and valid results future research should also broaden its methodological access to the field and more thoroughly consider alternate measurements to assess the learners' contact habits and preferences over time (Sundqvist, 2009b; Sylén, 2006; Sylén & Sundqvist, 2012).

Another essential issue on the learners' extracurricular language activities concerns the role of gender. As the present findings could demonstrate, females and males significantly differed only in the use of print media and the visit of websites. This particular finding is in line with research results reported elsewhere (Sundqvist, 2009b) and might indicate a gender stereotyping effect in reading and using internet sources, as well (Bimber, 2000; Schmenk, 2004). Therefore, this particular finding deserves further attention in future research efforts. Accordingly, relevant analyses have to expand their conceptual framework beyond the scope of EFL context – e.g., with respect to relevant educational factors which may contribute to originate and maintain gender-stereotyping effects on the formation of the learners' domain- or task-specific self-beliefs (Andre, Whigham, Hendrickson & Chambers, 1999; Meece, Glienke & Askew, 2009; Retelsdorf, Schwartz & Asbrock, 2015; Worrall & Tsarna, 1987).

As an important result of the present study, the relations of competence and self-belief constructs with the extracurricular L2 contact could be demonstrated to be subject-specific in nature. Thus, the learners' language activities outside school did not reflect a general, but rather a valid foreign language construct. That is, measures of learners' language contact outside school may not seriously be confounded with an overall interest in literature or media use. As this issue has not yet been analyzed, this finding may contribute to fill this empirical gap.

Furthermore, for the first time multivariate analyses of L2 construct relations were used to clarify the learners' competencies and self-beliefs in the area of oral narrative competencies. They could substantiate the predictive role of task-specific competence beliefs and anxiety responses in explaining interindividually existing differences in the learners' extracurricular language activities. In particular, they could show sequentially operating mediator effects of the task-specific self-belief variables. These mediator effects totally suspended any direct effects from the learners' L2 skills to their L2 contact. The same applied to the overall L2 self-concept variable – indicating the explanative superiority of task-specific measurements. With respect to the area of oral narrative competencies, the individual expectancy or anticipation of personal threat could claim the most critical role. Experiencing task-

specific worry and apprehension lowers related competence beliefs, which then restrict the frequency of extracurricular language activities. Here again, these results may contribute to refine and to expand current EFL research concerning the role of motivational variables (Csizér & Kormos, 2008b; Khodaday & Khajavy, 2013; Peng & Woodrow, 2010; Piniel & Csizér, 2013; Yashima, Zenuk-Nishide & Shimizu, 2004) – as they vitally refer to the task-specific measuring of self-belief constructs and, moreover, point out the decisive role of cognitive-motivational processes. It is not the learners' competence or proficiency level per se but rather their subjective perception of competence and apprehension which will affect their extracurricular language activities. However, further research has to replicate these findings with regard to other task-specific L2 areas – e.g., listening, pronunciation, reading, spelling, or composition. With that proviso, multivariate research efforts in the field should gain more precise access to relevant construct re-lations by more strongly analyzing construct relations on a task-specific level and considering potentially working mediator effects among constructs. That way, the complexities of construct relations should be incrementally unraveled and thus, step by step, the framework of L2 learners' motivational orientations or self-beliefs, respectively, could be conceptually and empirically optimized.

Apart from this general research perspective, the analysis of L2 learners' extracurricular language activities should certainly regard both their role as a dependent and as an independent variable. As the present study has explicitly focused the competence and self-beliefs as determinants of L2 learners' language contact outside school, it is hardly able to warrant a plain insight into construct relations under consideration. Therefore, future research in the field should best take all directions of construct relations into account. Furthermore, as the results of the present study are derived from cross-sectional data only, they do not allow for inferring any causal interpretation – rather they reveal the empirical testing of a conceptually decided *a priori* perspective of construct relations. Instead sound analyses concerning the causal ordering of relations among competence, self-belief and L2 contact variables can only be achieved by means of prospective longitudinal studies (Green, Nelson, Martin & Marsh, 2006; Marsh & Martin, 2011; Marsh & O'Mara, 2008b). These studies should, moreover, gradually integrate relevant other motivational, attitudinal and behavioral constructs (Csizér & Kormos, 2008b; Illes & Csizér, 2010; Gardner, Tremblay & Masgoret, 1997; Pae, 2008). Only results from longitudinal research will lead to a deeper understanding of developmental pathways explaining the relations among L2 learners' competencies, self-beliefs, and extracurricular language activities.

And finally, the results of the present study could not find any overall gender differences in the L2 contact variable. Accordingly, a moderator effect of the learners' gender on the construct relations could not be demonstrated. Multiple comparisons in the subgroup with particularly lowered competence beliefs showed a difference unfavoring the females in the frequency of L2 contact, but this difference was not statistically significant. Contrary to theoretical assumptions (Figure 1) as well to previous research findings with regard to the learners' overall L2 self-concept (Faber, 2013), here the internal distress hypothesis explaining motivational gender effects was not supported (Pomerantz, Altermatt & Saxon, 2002). This discrepancy might be possibly ascribed to the different levels of construct specificity used in each study. Hence, further research should comprehensively analyze this issue by comparing diverse task-specific and overall subject- or domain-specific measures. Taken altogether, the learners' gender appeared not to play a crucial role in determining their extracurricular L2 activities.

However, a closer look to the separate L2 contact items draws a more informative picture. With respect to the reading of English print media and the visit of websites significant differences between females and males occurred though. As this particular finding is basically in line with research results reported elsewhere (Sundqvist, 2009b), it should be further clarified. Gender differences might at least in particular cases depend on the type of contact source and, thus, might reflect the learners' various levels of literacy or internet literacy– which might, in turn, come as a result of gender stereotyping experiences (Dholakia, Dholakia & Kshetri, 2004). In particular, the use of a refined measure of L2 contact sources might help future research efforts to scrutinize the relation between gender, self-beliefs and diverse extracurricular language activities in a more thorough manner.

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Chapter 46

A LEARNER'S FOREIGN LANGUAGE SELF-CONCEPT AND ANXIETY ABOUT SPEAKING THE LANGUAGE

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ABSTRACT

The present study examines how a learner who learns Japanese as a foreign language (FL) at an Australian university develops a positive FL self-concept to overcome her anxiety about speaking the FL during the transition period from secondary school to university and then to a Japanese study abroad. FL self-concepts are a newly developed research area in applied linguistics, in which individual differences of the FL learners have been increasingly focussed on as well as affective factors, such as learners' feelings associated with the FL learning and socio-contextual factors, such as their learning environments. FL self-concepts refer to learners' beliefs about themselves as FL learners including an evaluation of their competence in FL and feelings of self-worth related to the evaluation. FL self-concepts are closely associated with anxiety to speak the FL because learners' social or intellectual status may be threatened by making mistakes, which may provoke negative FL self-concepts. This anxiety may worsen during the transition to universities or the initial stages of study abroad due to the unfamiliarity of new learning environments. Developing positive FL self-concepts and overcoming anxiety is very important, especially in those periods of time, for learners to increase their skills in communicating in FLs. FL or second language (SL) self-concepts have been investigated in the areas of English as FL, Russian study abroad, and European languages, such as Spanish or Italian (Jackson 2008, Mercer 2011a, 2012a, 20012b, Pellegrino Aveni 2005). However, no studies have been carried out in Asian language learning contexts. Therefore, the present study researches a learner's self-concept of Japanese as a FL.

Data were collected longitudinally for two years with diary writing, classroom observation and interviews (face-to-face and by Skype). A case study approach was used to closely examine how a learner's self-concept changes with detailed, personal and contextualised data. This learner was focussed on because she participated in the study both during transitioning to university and during study abroad and data collected from

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her were very detailed and informative. The learner hesitated to speak Japanese in the classroom at the beginning of the course due to the fear of making mistakes, which did not contribute to developing a positive FL self-concept. By preparing for the lessons more carefully according to her belief in the importance of practice, she became more confident and started speaking Japanese more often in class. Even after developing a positive FL self-concept in the classroom, she hesitated to speak Japanese outside of class in her study abroad. After developing her confidence in listening comprehension with frequent practice and having a critical experience, her FL self-concept in speaking became more positive. The present study found that the development of learners' FL self-concepts is not linear. Even after developing positive FL self-concepts in a particular learning environment, their self-concepts may become negative in a different learning context. The study also suggests that learners can develop positive FL self-concepts by making learning actions based on their beliefs about FL learning.

INTRODUCTION

The self has become recognised as an increasingly important factor in current second language acquisition (SLA) theory, which considers that learners are different individuals with their own beliefs about language learning (e.g., Barcelos 2011, Dörnyei 2009, Mercer 2011c). The nature of self-concept is complex and overlaps with other concepts, such as self-efficacy, self-belief and self-perceptions (Mercer 2011a, 2011b, 2011c). In the present study, 'self-concept' is defined as "a psychological construct that comprises a self-description judgement that includes an evaluation of competence and the feelings of self-worth associated with the judgement in question in a specific domain" (Pajares and Schunk 2005, 14).

As this study investigates a learner's foreign language (FL) self-concept, the specific domain here is understood to be the FL learning domain—or, more specifically, the domain of Japanese language learning as an FL. Self-concepts may be particularly crucial in the FL/second language (SL) learning domain, compared to the learning of other subjects, due to the close relationship between learners' self-concepts and self-expressions or identity issues, which are very frequently involved in language learning (Horwitz, Horwitz and Cope 1986, Mercer 2011c). FL learners' self-concepts refer to not only cognitive components of their self-beliefs about FL learning and evaluations of their FL abilities, but also affective components of how they feel about those evaluations (Mercer 2011c).

One affective factor that has been most frequently discussed in FL learning contexts is FL learning anxiety. Many learners experience anxiety when speaking target languages in classrooms due to their fear and embarrassment about making mistakes (Aida 1994, Bailey 1983, Gardner and MacIntyre 1993, Hewitt and Stephenson 2011, Horwitz, Horwitz and Cope 1986, Komiya Samimy and Tabuse 1992, Liu and Jackson 2008, Mak 2011, Trang 2012). FL learning anxiety is situation specific, differing from other types of anxiety, and is related to embarrassment and self-expression in the classroom (Horwitz, Horwitz and Cope 1986). While FL learners may desire to express themselves by speaking the target language in the classroom, they will nevertheless sometimes avoid using the language due to a lack of confidence (Yoshida 2009). These studies imply that learners with FL learning anxiety feel threatened to speak target languages in situations like classrooms. However, Pellegrino Aveni (2005), who researched learners in a study abroad context, states that anxiety does not provoke the threat, but that the threat to their self-perceptions as SL learners—which

potentially occurs by speaking the SL in front of other people—produces feelings of anxiety. According to Pellegrino Aveni, learners present themselves through their language use; however, when speaking a target language in front of other people, learners' ability to control their self-image is significantly impaired. She stated that learners need to feel validated: that others accept and appreciate their contributions in target languages; that they have social and psychological security in using the languages; and that their sense of social, linguistic, and intellectual status is being enhanced. Without these conditions, learners may feel anxious that their self is threatened, along with their status as intelligent and capable individuals.

Speaking target languages is very important for FL/SL learners to develop their speaking skills. The more positive learners' self-concepts as language learners become, the more participation of the learners in speaking the languages occur (Pellegrino Aveni 2005, Yoshida 2013b).

FL learners need to overcome their anxiety by developing positive self-concepts in order to increase their opportunities to speak the FL for the enhancement of their speaking skills. The transition from secondary school to university is a particularly psychologically stressful period, which in itself increases learners' anxiety, while learners' self-concepts are particularly affected by social environments, such as FL classrooms (Jackson 2008). Another situation in which learners' anxiety increases is a study abroad, especially the beginning of the study abroad due to the foreign environment that the learners have not experienced. Therefore, the present study examines how a Japanese language learner develops a positive FL self-concept¹ during the transition period to university and during the first stage of a Japanese study abroad. Because the studies about FL/SL self-concepts started in 2000s, there are not many studies besides Mercer (2011a, 2011c, 2012a, 2012b, 2014), Pellegrino Aveni (2005), and Jackson (2008).

These studies investigated self-concepts related to English and European languages, such as Spanish, Italian and Russian as SL/FL. More studies of self-concepts about a wider range of languages are necessary.

Japanese is an Asian language that is widely taught in the world, especially in English-speaking countries, such as Australia. However, FL self-concepts of learners of Asian languages have not been investigated in previous studies. Therefore, the FL self-concept of a Japanese language learner at an Australian university is explored in the present study. The research question of the study is as follows:

How does a Japanese language learner develop a positive FL self-concept and overcome anxiety to speak the language during a transition period from secondary school to university and the first stage of a Japanese study abroad?

To address the research question, the model of internal/external frames of references in FL self-concept formation (Marsh 1986, Mercer 2011c) and the theory related to self-presentation in SL (Pellegrino Aveni 2005) are used to discuss the factors that influence FL self-concept of the learner and her use of strategies to reduce anxiety to speak Japanese. These theories are introduced in the following sections.

¹ While study abroad can be an SL context, the learner's self-concept related to Japanese language learning is called FL self-concept in both an FL classroom context in Australia and a Japanese study abroad in the present study to avoid confusions.

INTERNAL/EXTERNAL FRAMES OF REFERENCES IN FL SELF-CONCEPT

By revising the model created by Marsh (1986), Mercer (2011b) developed a model of internal/external frames of references in FL self-concept formation. Mercer (2011b, 97) defined internal factors as ‘those that are centred primarily within the self’ and external factors as ‘those that stem primarily from outside the individual’. Internal factors consist of the following: 1) cross-domain comparisons (at the subject level, across FLs, across first languages and SLs, across skill domains, and across task domains); 2) belief systems (beliefs about language learning and attribution beliefs); and 3) affect. External factors are as follows: 1) social comparisons; 2) feedback from significant others and reflected appraisals; 3) perceived experiences of success and failure; 4) previous language learning/use experiences in formal/informal contexts; and 5) critical experiences.

Beliefs about language learning, which are pointed out as one of the internal factors, are different from one dimension of FL learners’ self-concepts—their beliefs about themselves as FL learners. In the present study, beliefs about language learning are defined as learners’ ideas about language learning (such as ‘practise is important for Japanese language learning’), while self-concepts are learners’ ideas about themselves as language learners (such as ‘I am good at reading, but not speaking, Japanese’). Beliefs about language learning is a factor that gives a strong influence on learners’ FL self-conceptss (Mercer 2011c, Yoshida 2013b).

LEARNERS’ SELF-PRESENTATION IN SL/FL

The ways learners present themselves in an SL is related to how they perceive themselves as SL learners (Pellegrino Aveni, 2005). Pellegrino Aveni (2005) has examined how SL learners present themselves in an SL through studying interactions with native speakers and how these speakers construct ‘selves’ in their in-country studies. According to her, self-concept—which is ‘a system of knowledge and perceptions held by the individual about the self’ through the recording of events and these recollections—gives the individual ‘a sense of security’ related to their strengths and weaknesses and a sense of ‘predictability about the self’s future capabilities’ (Pellegrino Aveni, 11). In Pellegrino Aveni’s theory, two types of factors affect learners’ self-construction:

- Social-environmental cues, including the learners’ personal characteristics, such as age, gender, physical appearance and behaviour
- Learner-internal cues, including the learners’ attitudes and beliefs about themselves, others and the FL; their own and foreign cultures; and the language-learning process.

According to Pellegrino Aveni (2005), learners use two different strategies to reduce their anxiety in study-abroad situations: they either keep using the SL and attempt to eliminate threatening elements (fight) or they reduce their use of SL to protect themselves (flight). There are a few different fight strategies. First, learners can use self-talk to coach and encourage themselves that they can perform adequately in the SL. This strategy is similar to affective strategies (Green and Oxford 1995, Oxford 1990), such as self-encouragement or

discussing one's feelings with someone else (or with themselves). Second, they prepare themselves for SL interactions so that they can improve their success and thus ensure a greater sense of security in speaking the SL (interaction preparation). Third, they may choose favourite SL environments or interlocutors with whom they feel comfortable. Learners also use flight strategies, by physically or verbally avoiding speaking with other people, speaking at a very low volume or masking their voice, or decreasing the length or the content of the message they want to convey.

The internal/external frames of reference indicated the factors that influenced learners' self-concepts in FL contexts, while the theory of self-presentation explained how learners' self-presentations were affected by different factors related to their self-concepts in a study-abroad context. However, both theories are applicable for both FL classroom contexts in transition periods from secondary schools to universities and the initial stages of study-abroad contexts because in these new learning environments learners' self-concepts are fragile and significantly affected by internal and external factors.

Pellegrino Aveni (2005) explains that learners' anxiety to speak SL comes from a threat to their SL self-concepts because they need to protect their self-images as mature and intellectual individuals. A learner also envisions his/her future self-image as an SL/FL learner according to his/her desires, which is called the ideal L2 self in Dörnyei's (2009) L2 self-motivational system. When learners consider that their real L2 selves (their current FL/SL self-concepts) are far from their ideal L2 selves; they may hesitate to speak the language from a fear of the threat to their FL/SL self-concepts. Dörnyei's theory of the L2 self-motivational system is explained in the following section.

L2 SELF MOTIVATIONAL SYSTEM

Dörnyei (2009) states that L2 selves act as learners' future self-guide to developing their proficiencies and achieving goals in their L2 learning processes. According to him, there are two types of L2 selves: the ideal L2 self and the ought-to L2 self. The ideal L2 self is 'the representation of the attributes that one would ideally like to possess', and the ought-to L2 self is 'the representation of attributes that one believes one ought to possess' (Dörnyei 2009, 13). The ideal L2 self represents the learner's own hopes or aspirations, while the ought-to L2 self represents someone else's sense of duties or obligations. The ideal L2 self is 'promotion' focussed, while the ought-to L2 self is 'prevention' focussed (Higgins 1998, 15). For example, a learner may desire to become a fluent L2 speaker because he/she wants to communicate with native speakers confidently and effectively (ideal L2 self). The other learner may desire to become a fluent L2 speaker to avoid receiving a bad grade or because his/her teacher says that being fluent in the language is important (ought-to L2 self). Dörnyei (2009) argues that the ought-to L2 self is more extrinsic and less internalised and that the ideal L2 self is more internalised by being integrated into the learner's current self-structure. The ideal L2 self is a powerful motivator of L2 learning due to the learners' desire to reduce the discrepancies between their real L2 selves, which reflect their current L2 proficiency, and their ideal L2 selves (Dörnyei 2009).

Learners' ideal L2 selves may be associated with their beliefs about language learning, which significantly influence on learners' FL self-concepts because it is considered that

learners usually develop their ideal L2 selves based on what they think is crucial for language learning. For example, if a learner believes that writing skills are important for language learning, he/she would develop an ideal L2 self who is a competent and skilful writer in the language. A gap between a learner's ideal and real L2 selves seems to be a motivator to reduce the gap. When the learner decreases the gap, his/her SL/FL self-concepts may become more positive. Therefore, the relationship among beliefs about language learning, ideal L2 self and SL/FL self-concept need to be investigated to examine how a learner develops a positive FL self-concept.

METHODOLOGY

Participant

The present study is a case study with a single participant, Sandra. A case study approach was used to closely examine how her self-concept changes with detailed, personal and contextualised data. Sandra was focussed on because she participated in the study both during transitioning to university and during study abroad, and data collected from her were very detailed and informative. Sandra enrolled for the second-year level Japanese course (one year) at an Australian university after completing a nine-month Japanese course at the Vocational Language Learning Centre (VLLC). She had a medical problem during high school and decided not to enter university straight away. Sandra had learnt Japanese for 10 years during primary and secondary school. She was a 25-year-old white Australian student majoring in international studies.

The university offered four Japanese language courses from first-year to the fourth-year level. The first-year level course is for students who have had no formal prior experience with learning Japanese. The second-year level course is geared towards students who have completed either a first-year level course at university or a Year 12 course at secondary school, or who have equivalent Japanese proficiency. Most of the classes that Sandra took at the VLLC were one-to-one tutorials with a Japanese tutor. The second-year level course at the university consisted of approximately 20 students in a class. Therefore, this was a very different learning environment for Sandra. The class met twice (two-hour lessons each) in 13 weeks in both first and second semesters. The lessons usually included introductions of new grammar and vocabulary with a few pair/group works.

After completing the second-year level course, Sandra stayed in Japan for nine months in the following year to learn Japanese at a university through an exchange program between the Australian and Japanese universities.

The first half of the present study (a transition period to university) was a part of a larger study on four students that investigated the relationship between the learners' FL self-concepts and beliefs about language learning. Sandra, who was one of the four volunteer students to participate in the study, was the only one who took the Japanese study abroad after the completion of the second-year level course.

Therefore, the current study focussed on her because the purpose of the study was to examine how a learner's FL self-concept changes in both a transition period to university and a study abroad.

Data Collection

Multiple instruments (diary entries, interviews and classroom observation) were used to elicit information about the learner's FL self-concept, beliefs about language learning and ideal L2 self.

The combination of interviews with journal or diary writing has been frequently adopted in recent studies of L2 learners' beliefs and self-concepts (Aragão 2011, Mercer 2011a, Navarro and Thornton 2011, Norton 2001, Peng 2011, Yang and Kim 2011, Yoshida 2013a, 2013b), as it allows researchers to ask further questions based on the diary entries and thereby better identify FL self-concepts, beliefs and L2 selves.

While there are many quantitative studies about learners' selves related to SL/FL, more longitudinal studies with a naturalistic approach and a qualitative analysis are necessary to examine the dynamic nature of learners' self-concepts (Lyons 2014, Sugita McEown, Noels and Chafee 2014).

Case study research, which can produce detailed and contextualised data on individuals, is particularly useful for self-concept studies, considering the dynamic and contextual nature of self-concepts (Mercer 2012b).

Therefore, the data in the present study were collected longitudinally (for two years); diary writing and interviews were employed to obtain detailed information about Sandra's FL self-concept, beliefs and ideal L2 self, including her changes with a particular focus on the first four months in the transition period and the study abroad.

The researcher, who was a course coordinator and a teacher of the course, asked for second-year volunteers to participate in the research. An outline of the proposed research was given to each participant, which was also explained orally by the researcher. Sandra was one of the four volunteers.

The participant signed a consent form, which stated that data collected would be used only for the research purpose and that participation or withdrawal would not affect her university study in any ways. The participant also received a questionnaire (see Appendix A) about her previous language learning experiences, her goals for taking the course and her beliefs about language learning, and she was asked to complete the questionnaire and bring it for her first interview.

The researcher enquired of the learner's goals because they are associated with the student's ideal L2 self. It was considered that the learner sets goals to achieve her ideal L2 self. The goals were considered as what the learner wants to achieve by the end of the course and in the future.

The questionnaire was used to find out how the learner's FL self-concept is related to her background, including her previous language learning experiences. Data were collected during the second-year level course at an Australian university and a Japanese study abroad (approximately two years), and the first semester of the course at an Australian university (approximately four months)² and the first stage of the Japanese study abroad (approximately four months)³ were particularly focussed on for the analysis. The schedule of the data collection is indicated in Tables 1 and 2.

² The first semester started at the beginning of March and finished in the middle of June (there was a 2-week break in the middle of the semester).

³ Sandra arrived in Japan in March before the course at the Japanese university started. The study focussed on the period from April to July.

Table 1. Schedule of data collection (Australia)

Date	Interview	Diary entry	Classroom observation notes
March	2	4	After each lesson
April	1	3	After each lesson
May		4	After each lesson
June	1	2	After each lesson
Total	4	13	26

Table 2. Schedule of data collection (Japan)

Date	Interview	Diary entry
March	1*	2
April	1	4
May	1	3
June		3
July	1	
Total	4	12

*The interview was conducted before Sandra's departure to Japan.

Diary Writing

Diary writing was used to find out about Sandra's FL self-concept, ideal L2 self and beliefs about language learning.

Previous studies indicate that diary writing is effective for investigating SL/FL learners' learning experiences, including their anxiety about learning a language and their frustration about teaching methods (e.g., Bailey 1983, 1996). Dairies are useful for eliciting aspects of language learning, such as FL self-concepts, beliefs and L2 selves, which are usually hidden or not accessible to an external observer (Bailey and Ochsner 1983). Sandra was instructed to submit a diary entry every week as an e-mail attachment except when she was sick or extremely busy. She submitted 13 diary entries in the second-year level course at an Australian university and 12 diary entries during her study abroad⁴ (see Tables 1 and 2). The length of the diaries varied according to the time spent writing, with the longest entry being three A4 pages and the shortest, half an A4 page. The average length was one A4 page. She was asked to write about her Japanese language learning experiences in English at least once every week, and instructed to write about her learning activities in and outside of the class and what she noticed or felt during her activities both in and outside of class. In her early entries, Sandra tended to only report on her actions. However, because information about her FL self-concept, beliefs about language learning and her L2 self behind those actions was also needed, written instructions for the diary writing were provided to her so as to elicit insights

⁴ The first 15 weeks in the transition period to university and the first 18 weeks in the study abroad were particularly focussed on in the current study.

about her own learning experiences (see Appendix B). Before Sandra's departure to Japan for the study abroad, additional instructions for diary writing in Japan were given (see Appendix C). The instructions suggested that she writes how she felt when she noticed new items, difficulties, problems or achievements. The researcher read the diaries prior to conducting the interviews.

Interviews

Semi-structured interviews were undertaken four times during the first semester in the Japanese course at the Australian university in face-to-face situations and four times during the first period of the Japanese study abroad by Skype⁵ to examine how Sandra's FL self-concept changes in relation to her beliefs about language learning and ideal L2 self (see Tables 1 and 2). The interviews varied from one hour to three hours, depending on the questions and the participants' responses. The interviews were conducted in English, which was the first language of the student. During the first interview, the researcher asked Sandra questions about topics, such as her previous experience of language learning, her reason for learning Japanese at university and her expectations about her Japanese skills or abilities upon completing the course. These questions were based on Sandra's questionnaire responses. In subsequent interviews, the questions were related to Sandra's diary entries and classroom behaviours. Although the researcher prepared some questions to ask the students, the structures of the questions could be altered and further questions asked based on Sandra's responses. This flexible structure was effective in allowing for appropriate questions to identify Sandra's FL self-concept, beliefs about language learning and ideal L2 self. Whenever Sandra identified actions (such as regularly preparing for lessons) without mentioning her thoughts about them, further relevant questions were asked during the interviews. All the interviews were audio recorded by the researcher and transcribed by a native or near-native English speaker to analyse Sandra's self-concept, beliefs and ideal L2 self in the data.

The transcripts were checked against the audio recordings, with the Japanese expressions used by the interviewer and Sandra in the interviews corrected as required.

Because the researcher was Sandra's teacher in the second-year level course at the Australian university, there was a possibility that this relationship might affect Sandra's reports in her diary entries and interviews in the first half of the current study.

At the beginning of the data collection, the researcher told Sandra that her statements and responses would never influence their relationship or her grade/status in the course and the university in any way, and asked her for honest reports.

In the last interview in the semester, the researcher asked Sandra whether her awareness of their relationship had influenced her statements or responses. According to Sandra, she was not the type of a person who changes reports depending on their relationship and stated honest opinions and feelings in the diary entries and interviews. Therefore, the influence of their relationship seemed to be limited at least at a conscious level.

⁵ One face-to-face interview was carried out before Sandra's departure to Japan in March.

Classroom Observation Notes

Because the researcher was Sandra's teacher at the Australian university, she took notes related to Sandra's classroom behaviours, including her use of Japanese after each lesson in the first semester for supplementary data to the diary entries and interviews. The purpose of the use of this method was to examine how Sandra's FL self-concept, beliefs about language learning, and ideal L2 self influence her classroom actions to back up the reliability of those factors that were identified in the data of diary entries and interviews.

Data Analysis

The data were analysed qualitatively with content analysis for in-depth review of Sandra's FL self-concept, beliefs about language learning, and ideal L2 self. Content analysis is useful for identifying important factors in texts (such as learners' self-reports) and for evaluating the relationship between them by using coding, mapping or tabulation (Krippendorff 2004). This approach has been used in other recent studies of beliefs (e.g., Navarro and Thornton 2011, Peng 2011). Huckin (2008) explains that there are two types of content analyses: conceptual analysis, where a concept is chosen for examination and coded, and then the number of times it occurs within the text is recorded; and relational analysis, which builds on conceptual analysis by also examining the relationship between concepts in texts. Relational analysis was used in the present study to scrutinise how the concepts under study, FL self-concept, beliefs about language learning and ideal L2 self, were related to each other.

The researcher identified the entries that indicated Sandra's FL self-concept, ideal L2 self and beliefs about language learning (in her diaries and the interview transcripts) and coded them, in order to analyse the relationship between these factors. FL self-concepts referred to comments about self-evaluation of current FL abilities including affects, such as fears or feeling of achievements (such as 'I can speak Japanese in the class without hesitating'). Beliefs included any ideas about Japanese language learning (such as 'practice is important for language learning').

Ideal L2 self was found in the Sandra's comments about her beliefs and goals. For example, when the learner believed in the importance of practice and set a goal of developing Japanese language skills, her ideal L2 self was considered to be a competent person in the use of Japanese as a result of constant practice. The learner's ideal L2 self and ought-to L2 self were not mutually exclusive. Following Dörnyei's (2009) argument that the ideal L2 self is more internalised and connected with intrinsic factors (e.g., learner's own interests or values), while the L2 ought-to self is less internalised and more associated with extrinsic factors (e.g., values of a teacher or classmate); Sandra's ideal L2 self was categorised through associating her comments with intrinsic or extrinsic factors. Whether L2 self is more promotion-focussed or prevention-focussed (Higgins 1998) was also considered in the categorisation. The researcher mapped the change of Sandra's FL self-concept and added her beliefs about language learning and ideal L2 self in related sections. The researcher's notes about Sandra's classroom behaviour from the observation of the classroom at the Australian university were also added. During the analysis, the data of diary entries and interviews were repeatedly reviewed, and the analysis was revised when necessary.

RESULTS

This section discusses how Sandra's FL self-concept changed more positively in the transition period to university and during the first period of her Japanese study abroad by citing excerpts of her diary entries and interview transcripts. Because questions in the interviews were based on Sandra's reports in the diary entries, the interview transcripts usually included more detailed information about her FL self-concepts. Therefore, most of the excerpts are from the interview data.

Change of Sandra's FL Self-Concept in a Classroom

Sandra found speaking Japanese in the class difficult at the beginning of the course at the Australian university:

Excerpt 1

I don't like to speak Japanese in the class because I don't want to look silly when I make mistakes. But this idea is stupid. I know I can learn from making mistakes and want to practice speaking in the class, but it is hard at the moment (interview, week 1, March).

The comment of Sandra indicates her hesitation of speaking Japanese from the fear of making mistakes. In transition periods to universities, FL self-concepts are significantly influenced by social environments like FL classrooms (Jackson 2008). In the new classroom environment of the university, Sandra seemed to be afraid that her FL utterances might not be accepted or appreciated by her teacher and classmates, and that her intellectual status might be threatened by making mistakes (cf. Pellegrino Aveni 2005). Sandra's anxiety about speaking Japanese in the class seemed to be related to the threat to her FL self-concept by making mistakes. According to the classroom observation notes, Sandra did not speak Japanese spontaneously to answer the teacher's questions to the class at the beginning of the course. Reduction of speaking target languages is a flight strategy to avoid the situations that potentially threaten learners' SL/FL self-concepts (Pellegrino Aveni 2005). However, her comment also shows her desire to speak Japanese to practise the language, as Yoshida (2009) found, and her belief that she can learn from making mistakes.

Her desire of speaking Japanese may be related to her belief about language learning. Sandra had a strong belief in the importance of practice in building her confidence and developing her Japanese skills:

Excerpt 2

Unless I practice it, it's just thinking, and I am pretty much a practical learner — I have to learn by talking, by doing, by feeling and experiencing, and that way I make the connections to, to what means what; and for me it's extremely important (interview, week 1, March).

Sandra also mentioned 'to me, confidence comes from practicing more and knowing more' (interview, week 5, March). She commented in her first interview that her goal was developing whole skills in Japanese including speaking.

Therefore, Sandra's ideal L2 self appeared to be 'a person who is competent in all skills in Japanese due to continuous and frequent practice of the language', which was based on her belief in the importance of practice. Her belief in the importance of practice implies Dweck's (2006: 23-25) 'growth' mindset, in which learners believe that they can develop their basic abilities through effort, compared to the 'fixed' mindset, in which learners believe that their qualities are innate and fixed. Sandra believed that she would be able to improve her skills through practice. Sandra's desire to be competent in all skills by practicing the language frequently could be based on her ought-to L2 self avoiding a bad grade. However, her motivation to learn the language was intrinsic:

Excerpt 3

I love learning. I have a passion to learn a language. A better grade should be nice, but I don't learn for the sake of the grade. I learn because I want to (interview, week 1, March).

It seems that Sandra desired to become competent in all skills as a result of her constant practice that was shaped by her love for learning the language. Therefore, her desire is considered to be more intrinsic rather than extrinsic or institutional. Sandra also seemed to be more promotion-focused (desired to improve language skills from her love of learning) than prevention-focused (desired to develop the skills to avoid a bad grade).

However, Sandra's ideal L2 self was far from her real L2 self at this stage. Although she wanted to present herself as a competent Japanese speaker in the class, she actually hesitated to speak Japanese from the threat to her FL self-concept involved in making mistakes. Due to this threat, Sandra could not practice speaking Japanese in the class, while she knew that the achievement of her ideal L2 self was not possible without practicing. Her avoidance of speaking Japanese in the class conflicted with her belief in the importance of practice. In this situation, Sandra could not construct a positive FL self-concept. She described herself as 'I am a perfectionist at heart and basically a shy person who does not always enjoy socialising' (interview, week 5, March). Gregersen and Horwitz (2002) pointed out the relationship between language learners' anxiety and perfectionism. Therefore, Sandra's high anxiety about making mistakes could be because of her perfectionist nature as well as the new learning environment.

These 'shy' and 'perfectionist' self-concepts, which had developed through the learners' past experiences of Japanese language learning, seemed to become more stable due to her experiences of not being able to speak more Japanese in her university classes.

According to Dörnyei (2009), a discrepancy between a learner's ideal and real L2 selves motivates him/her to reduce the discrepancy. To reduce the discrepancy, which frustrated Sandra, she started preparing for the lessons more carefully so that she would become more confident to speak Japanese in the classroom. These preparations increased her familiarity with classroom activities.

Sandra's preparations for lessons were equivalent with interaction preparation (preparations for interacting with other people in target languages), which is one of fight strategies in Pellegrino Aveni (2005).

Sandra prepared for lessons to interact with her teacher or classmates by speaking Japanese in the lessons. According to the researcher's observation notes in weeks 7 and 8,

Sandra became more relaxed, seemed to enjoy the lessons and started speaking Japanese more often in the class.

As the course went on, Sandra became more familiar with her classmates and found that they also made mistakes:

Excerpt 4

Now I enjoy speaking Japanese with my classmates. I found I was not the only one who makes mistakes. They make similar mistakes (interview, week 7, May).

According to Pellegrino Aveni (2005), when learners find familiarity and commonality with their interlocutors, their social and psychological security in speaking an SL increases. The increase of the familiarity with her classmates contributed to increase Sandra's sense of security to speak Japanese in the class. Sandra's comment in Excerpt 4 suggests that she made social comparisons—comparisons between her own competence in the FL and her classmates' competencies.

Learners' social comparisons are especially evident in the transition period to university, where changes in external frames of reference affect the formation of self-concepts (Mercer 2011b). Sandra was afraid that her classmates' Japanese competencies might be much higher than hers.

By finding that their competencies were not very different from hers, Sandra increased her sense of security and confidence to speak Japanese. After participating in the class more actively by speaking Japanese, Sandra finally overcame her anxiety to speak Japanese and make mistakes:

Excerpt 5

I can cope with making mistakes now, which I think is a real improvement for me! I feel more confident when I speak up (in Japanese) (diary, week 9, May).

Sandra's real L2 self became closer to her ideal L2 self because she became able to speak Japanese confidently in the class. There was no conflict between her belief in the importance of practice and her learning action, which is practicing speaking without being scared of making mistakes in the class. Sandra's FL self-concept became more positive compared to the beginning of the course:

Excerpt 6

I can speak Japanese in the class without hesitating. I am more confident in my Japanese and feel I am a totally different person, compared to the beginning of the course (interview, week 14, June).

Because Sandra became confident in speaking Japanese and enjoyed learning the language more, she decided to apply for the university's exchange program with a Japanese university, according to her other belief in the importance of exposure:

Excerpt 7

You need to be absorbed in the language every day. That is the best way to learn a foreign language (interview, week 14, June).

Sandra was accepted by the Japanese university and decided to study in Japan for nine months in the following year.

Change of Sandra's FL Self-Concept during Study Abroad

Sandra's main purpose of the study abroad was to gain more opportunities to practice speaking Japanese not only in the class, but also outside of the classroom as well as being exposed to Japanese in her daily life:

Excerpt 8

I believe that I would have more opportunities to speak Japanese with Japanese people or other international students outside of the class, which is lacking here in Australia. Yeah, exposure and practice are definitely keys to develop language skills (interview before the departure to Japan, March).

Experiencing more opportunities of exposure to Japanese and speaking Japanese both in and outside of the class through the study abroad seemed to be very important to achieve Sandra's ideal L2 self (a person who is competent in all skills in Japanese). She took Japanese lessons at the Japanese university with the other international students and commented that she did not hesitate to speak Japanese in the lessons.

However, Sandra found difficulty with speaking Japanese outside of the class. She lived in a dormitory of the university with many other international students and a few Japanese residential assistants. Sandra commented that she hesitated to speak Japanese with the other international students, especially those whose Japanese proficiencies were very good:

Excerpt 9

I mean in I House (the dormitory), there are Korean and Chinese people here who speak really good Japanese, and occasionally I'll talk to them if they happen to be out, but in general — I mean, I suppose because I don't — because I'm not very confident in my Japanese skills, I don't talk to them (interview, April).

Sandra's comment again shows social comparison, which is a comparison of Japanese speaking skills between herself and the other international students. As social comparison is often found in transition periods to new learning environments (Mercer 2011b), this occurred again at the beginning of the study abroad. Sandra avoided speaking Japanese with the other international students whose speaking abilities in Japanese were very good due to a threat to her intellectual status by making mistakes or showing poor speaking skills in front of those students. This is again a flight strategy in Pellegrino Aveni (2005). At this stage, her ideal and real L2 selves were distant at least in the contexts of outside of the Japanese class since Sandra could not present herself as a competent Japanese speaker. Her avoidance of speaking Japanese with the other students did not support her belief in the importance of practice. The gap between Sandra's ideal and real L2 selves did not contribute to the development of her positive FL self-concept.

Sandra missed opportunities to practice speaking Japanese, which surfaced her self-concept as a person who is shy and not sociable again:

Excerpt 10

Inherently, I am very shy as well, so if I don't really know what they're (the other international students and Japanese people) talking about, or how, or how I can respond to it, I tend to not talk to them at all (interview, April).

Sandra's self-concept as a person who is shy and not very sociable seemed to be a core self-concept (Mercer 2011a), which is more stable and not dynamic. While Sandra's self-concept as a shy person did not change, she achieved a positive FL self-concept as a confident Japanese speaker in the class.

However, because she did not have a sense of security to speak Japanese due to a threat to her intellectual status outside of the class, this self-concept as a shy and unsociable person appeared as an obstacle to speak Japanese with other people.

While Sandra found practicing speaking Japanese outside of the class difficult, she practiced listening to Japanese intensively in her daily life by watching TV and Japanese animations, and listening to Japanese people talking with each other on the streets or trains, based on her belief in the importance of practice:

Excerpt 11

You need to practice a lot, and it is easy here. I always listen to TV and people talking (in Japanese). Constantly listening to Japanese now. I can pick up what people are saying and understanding what they say a lot better than some of the other people around me. But at the same time it's — I still find it hard to talk back (interview, May).

Sandra practiced listening according to her belief in the importance of practice that was based on her growth mindset. As a result, her listening skills improved. Sandra's self-concept in the domain of listening comprehension became more positive. Learners sometimes rely on their self-concepts in a particular domain to evaluate their whole FL self-concepts to protect them (Mercer 2011c). However, Sandra's FL self-concept did not really become positive even with a positive self-concept in the listening comprehension domain because her ideal L2 self was a competent FL learner in the whole skills as a result of constant practices. Without practicing speaking Japanese in more authentic situations than the classroom, Sandra's ideal L2 self could not be achieved. There was a gap between Sandra's ideal and real L2 selves.

Later in her study abroad, Sandra went to a hot spring with a Japanese residential assistant and a few English-speaking international students on a weekend and found that she had better Japanese speaking skills than those international students who were studying in a higher-level Japanese class than hers:

Excerpt 12

One of the (Japanese) ladies was like, was telling me how her grandson I think has a dog like that and she looks after it...it was just nice to be able to talk to her and say, "Oh, is that so? That's so cute. I've got a dog at home myself," and that sort of thing. I understood all she had said...they (the other international students) didn't talk to the lady that sat next to us and they found it hard to — they spent most of the time talking in English. They didn't really spend a lot of time trying to talk in Japanese at all...I felt like I spent more time talking to her than I did my friends (interview, July).

This experience seemed to be an essential factor to change Sandra's self-concept related to speaking Japanese from negative to positive. Learners' perceived experience of a success is one of the external factors that influences their FL self-concept (Mercer 2011b). This experience is also a crucial experience that is the other external factor to develop FL self-concepts in Mercer (2011b). The improvement of her competence in listening comprehension may have increased opportunities to speak Japanese, as Sandra mentioned that she could understand what the woman had said completely. Sandra's comment indicates a social comparison between herself and the international students who belonged to the upper-level Japanese class. Sandra perceived that she was a more competent speaker in Japanese than the other students. This perception contributed to reducing the gap between her ideal and real L2 selves and developing a more positive FL self-concept, which led her to feel a sense of security to speak Japanese outside of the classroom.

Sandra mentioned this experience as her 'confidence booster' (interview, July) and gradually became more positive about her Japanese speaking skills. Sandra's more positive self-concepts about her Japanese speaking skills also seemed to change her learning actions. She started creating more opportunities to speak Japanese:

Excerpt 13

As times going on doing classes and that I am trying to speak more Japanese with these people (international students and Japanese residential assistants who were staying in the same dormitory), even if they respond to me in English like if I know to say it in Japanese, I will say it in Japanese (interview, July).

For Caucasian students who are native English speakers, it is not easy to find opportunities to speak Japanese in a Japanese study abroad because many other international students understand English, and Japanese people, especially Japanese students, often prefer to speak English for their English practice. Therefore, it is not easy to keep talking in Japanese for native English speaker students, unless their Japanese is very good. However, Sandra kept using this strategy to increase the chances of practicing speaking Japanese. This behaviour is a fight strategy in Pellegrino Aaveni (2005) and very different from Sandra's previous behaviour of avoidance of speaking Japanese with the other international students, which is a flight strategy. Sandra's learning action, which is practicing speaking Japanese actively, became consistent with her belief in the importance of practice, which seemed to help the development of her positive FL self-concept.

Sandra reflected on her study abroad in her interview early in the following year:

Excerpt 14

I definitely think I had a little bit in the beginning because I know I put a wall between myself and anyone who could speak Japanese better than I could...by the second semester I don't think it was there at all...I sort of just embraced it and at the same time I sort of — I didn't use the marks I was getting from them as the marker of me picking up the language. I was using my comprehension and the fact that I understand what people were saying and I could understand what was being written...as long as you're — as long as I'm progressing at the pace I want to progress at and as long as I can see improvement,

I don't care anymore. I just want to keep learning more (interview, February in the following year)⁶.

At the beginning of the course, Sandra compared her Japanese skills with the other learners whose skills were better than hers, which reduced her sense of security to speak Japanese outside of the class. However, after she became more confident in her Japanese speaking skills, she started focussing on her own progress. Mercer (2011b) categorised learners' sense of progress under 'affect', which is one of the internal frame of references to influence the learners' self-concepts. According to Mercer (2011b), learners' positive affective responses to their sense of progress effect on their self-concepts. Learners who maintain a sense of security based on their internal cue tend to produce more SL and take risks more often, compared to those who rely more on social-environmental cues (Pellegrino Aveni 2005). Sandra seemed to develop more positive self-concept and become more active in her learning by focussing on internal factors, and her sense of security based on her own progress appeared to make her create more opportunities to speak Japanese.

DISCUSSION

This section discusses important factors to change the learner's FL self-concept to more positive. Sandra's FL self-concept was affected by a fear of making mistakes, which could threaten her social and intellectual status as an FL learner in the new learning environments, in line with Pellegrino Aveni's (2009) finding. Due to this fear, Sandra hesitated to speak Japanese in the FL classroom or outside of the classroom in the Japanese study abroad context. Although she wanted to practice speaking Japanese based on her belief in the importance of practice to achieve her ideal L2 self (a competent FL learner in all skills, including speaking, as a result of constant practice), she could not do so. Sandra's real L2 self was far from her ideal L2 self, which did not contribute to developing a more positive FL self-concept. Her learning action of avoidance of speaking Japanese conflicted with her belief in the importance of practice.

To reduce this discrepancy between the ideal and real L2 selves, Sandra started preparing for the lessons more carefully in Australia and practicing listening to Japanese more intensively in Japan, according to her belief in the importance of practice. Sandra's belief in the importance of practice is related to her growth mindset. The growth mindset is also associated with an attribution belief that one's success is attributed to one's effort. Developing a more positive self-concept may be easier for learners who believe in the value of effort within a growth mindset, as opposed to those who have a fixed mindset.

By making learning actions based on her belief, Sandra developed her Japanese knowledge and skills and became more confident, which contributed to increase her sense of security to speak Japanese. The increase of familiarity with what she was learning and the learning environments, and her classmates or the other international students also supported enhancing her sense of security. Furthermore, Sandra realised that her Japanese ability was

⁶ Data collection was continued in the following year of Sandra's study abroad to examine how her FL self-concept changed in a Japanese course at the Australian university that she took after completing her study abroad, which is beyond the scope of the present study.

similar to or even better than those of the other students. Social comparison is one of external factors that influences learners' FL self-concepts (Mercer 2011b). While at the beginning of the courses, the social comparison gave a negative influence on Sandra's FL self-concept when she perceived that her ability was lower than the other students, later in the courses, the comparison influenced her FL self-concept positively by realising that her Japanese competence was similar to or better than those of the other learners.

Once Sandra became more confident, she started focussing on her own progress, which is one of the internal factors to influence FL self-concepts (Mercer 2011b), rather than comparing her competence with those of the other students. According to Mercer (2011b, 22), an important affective state for a learner's positive response to a particular FL is 'a sense of progress', which also increases motivation to learn FLs. Pellegrino Aveni stated that when learners establish their sense of security in speaking the SL from within, others' behaviour has less effect on it and they take more risks. As Sandra focussed on her own progress, which is internal, and developed more positive FL self-concept, she stopped worrying about differences between her Japanese competence and those of the other learners and started taking more risks to speak Japanese.

The first important factor was beliefs related to a growth mindset, which shaped the learner's learning actions to reduce the gap between her ideal and real L2 selves. The learner's perception of the reduction of the gap between her ideal and real L2 selves gave her confidence, a sense of security to use the FL, and the feeling of progress, which led her to create more opportunities to use the FL and take more risks. While conflicts between the learner's belief and learning actions did not contribute to the development of a positive FL self-concept, more consistency between those factors resulted in the decrease of the gap between her ideal and real L2 selves, which ended up developing her positive FL self-concept. Therefore, consistency between beliefs and learning actions are also crucial factor. The increase of familiarity with learning contents and environments as well as the other learners also supported enhancing a sense of security to use the FL more often, which seemed to lead to the decrease of the gap between ideal and real L2 selves. The other important factor was the feeling of progress as a result of perceiving the reduction of the gap because increased feeling of progress appeared to make the learner take more risks without worrying about social comparisons, which was essential for the development of a positive FL self-concept.

CONCLUSION

The present study revealed that even in new learning environments, which are stressful periods of time, the learner could reduce her anxiety and develop a positive FL self-concept as a confident FL speaker by making learning actions based on her belief in the importance of practice and reducing a discrepancy between her ideal and real L2 selves, regardless her self-concept as a shy and unsocial person. The learner's FL self-concept was dynamic and contextual.

A positive FL self-concept, which had been developed in a particular learning environment, did not apply for the other learning context. The learner's FL self-concept was closely associated with her belief about language learning and ideal L2 self. Because the

present study is a case study about one Japanese language learner, there is a limitation in generalising the findings.

Nonetheless, this study could possibly be a pioneering one about an FL self-concept of a Japanese language learner, which found important roles of beliefs and ideal L2 self in relation to an FL self-concept. Further studies about FL/SL self-concepts with wider range of languages in various learning contexts would be necessary in the future.

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APPENDIX A

Questionnaire

1. Name:
2. Age (if you do not mind):
3. Which languages do you speak or understand?
4. Have you learned Japanese before starting the current course? If you have, please write the details (e.g., where and how long you learned Japanese including both formal instruction and self-study).
5. Do you have any foreign language learning experience besides Japanese? If you do, please give details.
6. Why did you decide to learn Japanese? (You can be quite honest. If you decided to learn Japanese as a course requirement, answer so)
7. What is your goal in taking the current Japanese course? What do you expect by completing the course?
8. Please complete the following sentence with your own words.
I believe that foreign language learning is

APPENDIX B

Diary Writing (In the Japanese Course at the Australian University)

I would like you to focus on the following points for your diary writing:

1. If you have watched any Japanese anime or drama, read Japanese comics or listened to Japanese CDs during the week, please write the titles of them and how many times you have done these things. If you have found something new in them or picked up some Japanese expressions, please write what they were.
2. If you have prepared for or reviewed the classes during the week, please write what you have done.

3. In terms of classroom learning, please write what you have found new, easy or difficult. Please write any good comments or criticism about the teaching.
4. Please write about your problems or the points that you are struggling with as well as the points that you are good at.
5. Please write what you felt when you were doing particular activities in classes or at home as well as what you really did (e.g., when you found out something new about Japanese culture, the language or a way of learning the language, a problem or difficulty when learning particular items, and how you felt about it).
6. Please write in the diary as often as possible (e.g., two or three times a week). If it is difficult, please take note when you have done particular activities at home or after Japanese classes at university and add them when you write a diary entry.

APPENDIX C

Diary Writing (In the Japanese Study Abroad)

As well as what you wrote in your diaries in the previous course, you can also write about any Japanese learning experiences outside of the class (e.g., having Japanese conversations with people, watching TV, and etc.), what you found and how you felt during the experiences. Be reflective as much as possible.

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Chapter 47

DO ‘RESOURCEFUL’ METHODOLOGIES REALLY WORK IN ‘UNDER-RESOURCED’ CONTEXTS?

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ABSTRACT

Teaching and learning is believed to be context bound, as what works in one context may be unsuitable in another context. Appropriate ELT methodologies are chosen in line with a variety of existing variables, including ‘the constraints of the school or educational setting’ (Richards and Rodgers, 1996).

Unfortunately, innovations in approaches and methodologies have mostly been a reaction to learners’ proficiency and the demand for specified competences by the public. This has prompted a series of ELT reforms from the sixteenth century England to the present.

On the whole, reforms in the domain have been addressing vertical concerns as a result of the conservative understanding of the Englishness of ELT contexts. However, in recent times, English has spread beyond the borders of conservatism, thereby pushing the concerns of a homogeneous ELT landscape to more flexible and dynamic spectra of teaching and language use. In spite of this flexibility, the periphery still believes in the methodologies conceived at the Centre for the Centre. Due to the inapplicability of the methodologies in all contexts, a dividing line seems to exist between ‘standard’ contexts and ‘under-resourced context’.

This Chapter argues that the ‘under-resourcefulness’ of an ELT context is misguided, as it is derived from the conception of what is believed to be ‘standard’ and not on the concept of adequacy and sufficiency. Secondly, the Chapter hopes to demonstrate that the ‘under-resourced’ conception of contexts is the result of the inapplicability of Centre-driven methodologies in contexts that are only different and not actually under-resourced per se.

The centrality of these under-resourced contexts in innovating ELT methodologies is posited.

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INTRODUCTION

Contextual factors regulate ELT from theory to practice and tend to provide a matrix against which the success or effectiveness of any curriculum is determined. What actually counts as contextual factors are not a set of predictable static variables that can be theoretically factored into the literature. Consequently, contexts tend to differ. Broadly speaking, the context of language learning includes the intrinsic dynamics of the learner, that is, what individuals bring to the activity, the cultural context, the social context, including relationships with other learners and the teacher, the physical environment, the pedagogical context, that is, the task or materials, and the socio-political environment (Larsen-Freeman and Cameron, 2008). Deriving from this, it is possible that any attempt at evaluating the appropriateness of ELT methodologies or the resourcefulness of contexts must first determine whether the methodologies themselves are contextually rooted in the local culture. Adopting such an approach would suppose that the environment and culture of the learners be seen as a natural habitat and not judged on any prescriptive set of values or norms. This wise, the fallacy of attempting to hastily transform natural learning environments into artificial ones to suit a set of teaching and learning cannons would be avoided. ELT contexts in the South have been term ‘under-resourced’ and ‘difficult’ to refer to situations where the difficulties of education range from poverty, cultural barriers, irrelevance of education, geographical barriers to language load (Das and Almekhlafy, 2012). In a more specific sense, it is a combination of the teaching and learning challenges arising from large classes, unmotivated learners, mixed abilities, lack of textbooks, lack of teaching and learning resources, as well as inadequate infrastructure (Toledo, 2001; Smith, 2011; and West, 1960 cited in Kuchah Kuchah and Smith, 2011). Naturally, one would expect time to play on these variables within the concept of evolution, if actually there are fully qualified to be named ‘difficult’ or ‘under-resourced’, but the tendency has been that the problems keep cumulating day by day with each problem generating another till the context becomes complicated and highly problematic (Das and Almekhlafy, 2012). Given the persistency of such a situation, there is the urgency for any critical mind to ask whether such contexts are actually humanly ‘under-resourced’, ‘difficult’ or only deficient from a prescribed pedagogic definition. Otherwise stated, would it be easier for ELT methodologies to meet the deadlines of such contexts or drive the contexts to meet the requirements of existing ELT methodologies? If teaching methodologies are to be hailed for their contextual appropriateness, then the definition of ‘under-resourced’, ‘difficult’ needs to be re-examined. This Chapter argues that the description ‘under-resourcefulness’ of an ELT context is misguided, as it is derived from the conception of what is believed to be the prescribed norm and not on the concept of adequacy and sufficiency. Secondly, the Chapter hopes to demonstrate that the ‘under-resourced’ conception of contexts is the result of the inapplicability of Centre-driven methodologies in contexts that are only different (which is normal) and not actually under-resourced per se.

‘UNDER-RESOURCED’ OR ‘DIFFICULT’ CONTEXTS

I begin this section with an internship report by a peace-corps teaching fellow, Brian Jonson, in Cameroon in 2005 to present not only the supposed ‘under-resourcedness’ and

'difficulty' of the under-resourced contexts but also to examine narrator's consciousness in the narrative.

[...]. There was always the possibility of being sent home, of an article or clothing being inappropriate, of something just not being right. [...] the beating of children on the hand with a stick was common. The Cameroonian teachers said that if this was not done the kids would not listen or learn. [...] Overheads were not available, and making photocopies were not possible. I adjusted to using the blackboard and worked on being an animated teacher.

This narrative paints a picture of the total context of learning in the South, although highly under-researched. Brian's painting of the situation reflects the learners' environment from the socio-political, cultural, economic aspects in addition to teacher quality, whose implications in learning are focal. But the narrator's consciousness is a demonstration of teacher training in what I prefer to call the 'reduced world' (as opposed to the broad world colonized by English), which has failed to accompany the spread of English and has rather stood behind to address it 'not being right'. The inappropriateness of clothing captures the economic situation of the learners and his appreciation of 'always' sending children home reveals a limited sense of judgement, which helped him to becoming an animated teacher.

Another narrative which extends Brian's world and gives a holistic picture of 'under-resourcedfulness' of the contexts is provided by Maley (2001: 1):

Let us take as an example a rural secondary school in Country X, 200 kilometres from the capital. In the Form 4 class, 60 students are crammed into a classroom which would comfortably accommodate 30. They range in age from 14 to 20. Most of the students have walked at least 5 miles to get to school by 8 am. Before that, they had helped with household chores, including collecting firewood, bringing water from the village standpipe and caring for younger siblings. At 9 am the temperature is already 30 degrees centigrade.

The teacher comes to school on his bicycle, after ensuring that his wife's market stall is set up for the day. His own salary, when it is paid, is insufficient to support his wife and their two young children. He has a 2 year teacher's certificate from a rural training college. His competence in the English language is rudimentary. He conducts the English class mainly in his mother tongue, which all the students share.

The textbook the students are using is a pirated edition, dog-eared with use. In this textbook (to spare embarrassment I will not name it) a cast of white characters enact situations in which they shop in malls and supermarkets, watch TV and videos, arrange and go to teenage parties, discuss popular music and movies, go on holidays and so on.

The teacher has a hard time putting this across, not least because he himself has never experienced anything like the antics engaged in by the characters in the book ~ even when he understands what they are. The students, when they understand at all, are bemused, not least because they have no idea why they are studying this strange language in the first place. They know that they must pass the examination though. Outside school they rarely encounter this language, except in advertisements for products they cannot afford to buy, or in pop songs, which they learn to mimic without understanding. One or two of them have relatives who have emigrated to the USA, Canada or Australia. These mythical people rarely return to visit their home village.

The walls of the classroom are dirty and the plaster is peeling off them. The blackboard is pitted and grey with use. There is currently no chalk. There are ceiling fans but no electricity to run them. By 10 am the temperature has risen to 40 degrees centigrade. In the textbook, the young people are dancing at the barbecue. In the classroom, eyelids are already heavy with fatigue. Most of the students have not yet eaten today. A caricature? Sadly not.

Although Maley, unfortunately, comments that the context painted in his narrative may not be true from a global point of view, he later admits that ‘what I have described is the situation in a majority of the world’s English classrooms’ (see Tomlinson (2005: 137) for an appreciation of similar experiences). It is far from the reduced ideal world of pedagogical excitement and innovatory teaching we would like to think we inhabit’ and the bulk of the ELT learners in the world fall within this category of the real world (Smith, 2011). Maley’s polarisation of the characters in the textbook dancing and the teacher who has never experienced anything like the antics engaged in by the characters in the book’ shows the landmark dichotomy between the world of ELT methodologies and the world of learning explained in Birbirso’s (2014) argument against the content relevance of instructional materials in Ethiopia.

The class size of 60 learners in the narrative is just one of the modest examples of class size issues that have contributed to the nomenclature of ‘difficult circumstance’. Kuchah Kuchah’s story retold by Richard Smith provides a clearer picture of the context:

Kuchah’s students were adolescents, most of them between the ages of 16 and 17, with a few slightly below or above this age range. He entered his class on the first day full of enthusiasm and with a determination to use his skills to make his French speaking learners perfect speakers of English. But it was not long before three things pushed him back: the size and practical disposition of the classroom, the lack of textbooks, and the almost unbearable temperature ... The class referred to in this story was made up of 235 students, some of whom had no space to sit inside the classroom and as such were literally hanging in through the windows from both sides of the classroom. Kuchah was left with less than a metre between the front benches and the chalkboard, so that he could barely turn round and write on the board. Benches were arranged in rows with space between each row for teacher and students to walk in and out of the class. But Kuchah’s class had no luxury of space since many more students needed to be sitting in class than there was space for. So his students usually came early in order to have space in the class and latecomers either stayed outside, listening through the windows, or stole in through one of the windows to squeeze themselves into some standing space at the back. This meant that each time a latecomer stole into the class Kuchah had to leave some time for the laughter this caused to die down before continuing with the lesson. In a context where the syllabus is basically examination-centred and where the teacher’s work is measured by the number of textbook units he has covered within a given period, this kind of time-wasting can be very disruptive. Yet Kuchah had no choice but to accommodate to the situation.

Treating these contexts as naturally as they are entails seeing the teacher and learners as humans in communal activities within varied social, cultural, economic, and political ecologies. Being a reflection of out-of-school life, campus life is co-constructed by both the

learners and the teachers, most especially as the experiences lived by the learners are synchronically and diachronically shared by the teachers. Secondly, the economic situation of both the learners and teachers is not getting any better. Thus, what would be considered economically 'disadvantaged learners' may as well be referring to experiences shared by a good number of the teachers, otherwise, such economic colour painted by expatriate researchers and teachers may not be seen differently by the teacher. Thirdly, the demographic explosion experienced by countries in the South is not accompanied with the provision of social amenities. Consequently, classes are bound to be large, especially with governments' interest to meet global agenda- the 'Education For All' Millennium Development Goals (MDG).

Defining these contexts as they present themselves reduces the possibilities of becoming idealistic and thus focus on what is realistic. Nothing in such contexts is inhumanly impossible as learners' thoughts are embedded in the meanings they construct about the world around them. For the contexts, therefore, to be declared 'under-resourced' the learners' faculties would have to be probed into to be sure they themselves see their learning environments as under-resourced or difficult. Worthy of note is the fact that cognition and cultural influences are inextricably entwined and are involved in the process of learning, with serious bearing on education (Schcolnik et al., 2006). The total context of learning becomes a system woven by the inter-dependence and interaction of factors. The outcome of interacting variables, perhaps with a trigger from an external stimulus, is largely unpredictable and unending (Haugen, 2001; Tamjid, 2001); Schcolnik et al., 2006) to the extent that claiming their difficulty or under-resourcefulness may rather seem an attempt to assign constraints to naturally occurring patterns, which rather ought to be defined. It is worth noting that many people in such contexts have succeeded and are succeeding in many areas of life. Defining what actually counts as the constraints of a context may be more pragmatic as it can help us focus on what is realistic and appropriate and thus plan for success (Graves, 2000). Many researchers seem to agree that both curriculum and methodology should only be determined after a consideration of local conditions (Tomlinson, 2005) and not simply be prescribed by 'dictators of pedagogy' who for the most part, are at odds with the cognitive needs of the teacher and alien to the immediate realities of teaching' (Kuchah, 2008).

WHAT METHODOLOGY FOR THESE CONTEXTS?

The contexts described above (TESEP) are different from those in advanced contexts (BANA) (Holliday, 1994) in terms of class sizes, learners' socio-cultural, sociolinguistic and economic situations and have a strong bearing on cognitive factors often exclusively foregrounded in ELT. Socio-cultural approaches to learning emphasise that actual learning is situated and occurs in specific settings or contexts that shape how it (learning) takes place (Richards, 2008). Language learning tends to be determined by the way the child's faculty links its mind and mental abilities to its environment when constructing fundamental syllabuses and hypothesis about social values. It occurs therefore that different contexts offer different potentials for learning. Learning outcomes therefore get embedded in cultural meaning systems as a result of learners' interaction in their immediate and remote environment, defined through social, cultural, and political patterns that constrain the

linguistic forms they hear and use (Watson-Gegeo and Nielsen, 2005; Birbirso, 2014). Zuengler and Cole (2005: 304) cite Willet (1995) as intimating a strong correlation between the socio-political dynamics outside the classroom and learners' participation roles, identity, and classroom ideologies, which have most often been overlooked.

As Watson-Gegeo and Nielsen (2005) warn, the cognitive/social dichotomy widely taken for granted in second language acquisition theory obscures the relationship between the knowledge about language that learners construct and the social, cultural, and political contexts in which acquisition takes place. Learning outcomes in each context tend to inform instructors and researchers on what is methodologically (im)possible. This supposes a policy of adaptation of teaching methodologies to the effect of contextual relevance, but, unfortunately, the link between policy design and implementation is commonly understood to be fragmented. Factors ranging from low infrastructure, poverty, poor training, paucity of teachers, lack of interest from key actors etc. are untactfully believed to be the cause of the broken link (Schweisfurth, 2013; Bolitho, 2012).

Although Butler (2011) regrettably noted that we still have only a limited understanding of how best to achieve contextually embedded adaptations and how they affect students' English learning, various attempts have been made to demonstrate pedagogical innovations that may enhance learning in such contexts. Kuchah Kuchah and Smith (2011) argue for a pedagogy *for* autonomy as against pedagogy *of* autonomy as a plausible strategy of reducing time-on-task and encouraging learner engagement in such contexts. Equally, Maley's experience in getting students to find natural sources of pigments and getting pieces of cloth salvaged from the floor in seamstresses' shops to construct learning materials (Maley, 1999: 4) demonstrates how the creative construction framework within the context of 'authentic materials' can be a suitable response to lack of course books. Drawing from his experience training teachers in rural areas in Ghana, Maley opts for a methodology that involves the whole educational experience rather than a narrow, ELT approach.

Tomlinson (2005: 147) cites Holliday as advocating a methodology based on existing cultural resources to motivate learners in educational settings. Of course, and as has already been argued, such cultural resources definitely differ from one ecological setting to another. Chun-hua (2009) reflects on the differences of ELT experience in China and that of other parts of the world and suggests a crucial understanding of the nature of language and language learning to be able to adapt possible learning theories to the Chinese context. However, Tomlinson (2005) credits learners for their dynamism, as they are usually willing to adapt to new cultural experiences in teaching- a major option for practitioner. On the whole, it is universally acknowledged that being taught in culturally-appropriate ways raises achievement (Schwesfurth, 2013 citing Sternberg, 2007), other factors held constant. More arguments to culturally-appropriate methodologies abound. Although the general tendency for students to prefer receiving corrective feedback is believed to be consistent across most contexts (Sheen 2004), some studies have reported that the strength of the preference varies according to learners' cultural backgrounds, previous and current language learning experiences, or proficiency levels (Lyster et al., 2013).

A characteristic feature that has led to the description of under-resourcefulness of classrooms in the South is the class size threshold. Kuchah Kuchah's class referred to in this Chapter (to take this as an example) far more than triples the threshold in BANA contexts. Despite the fact that this has largely contributed to the description of the context of teaching as under-resourced and difficult, researchers are yet to conclude on how large class sizes

affect achievement. The value of the positive effects of small class size on achievement, a research interest that upsurged after the Tennessee project STAR (Nye et al. (2001); Finn and Achilles (1990); Finn et al. (2001)), is challenged to be non-significant. Another argument to the insignificant outcomes is that the methodologies often used in such studies are anecdotal (Blatchford et al., 2011). Ehrenberg (2001: 4) draws from the National Assessment Educational Progress (NAEP) spanning 1996 to 1973 to observe the mismatch between class size reduction (CSR) and the level of achievement. There is actually little evidence to claim a one-to-one mapping between smaller class sizes and achievement as often insinuated in correlation studies, especially as some student groups may benefit more from being exposed to experimental designs than others (Konstantopoulos, 2010).

The class size debate is, for the most part, confounded with teacher quality, as the interest in correlational studies has been to treat class size as exclusively accountable for achievement. Teacher quality is argued to have a significant effect. For example, lower quality teachers are unlikely to increase learning than existing ones as much as experimental evidences predict (Ehrenberg, 2001). In essence, it is believed that class size only matters for inexperienced or low-quality teachers as more effective teachers are better able to adapt their teaching styles to accommodate larger classrooms (Schazenbach, 2014). There is also very little evidence to guarantee the effectiveness of teaching in smaller class sizes as teachers are less likely to change their teaching strategies according to variation in class size (Wilson, 2002).

Some experiences that have sought to demystify the commonly noted classroom challenges posed by 'under-resourced' and 'difficult' contexts of learning tend to shift the paradigm. Maley's (2001) focus on learners' out-of-school life, interests, and problems to build teaching activities was instrumental in fostering language development. Hedge (2000) notices that such options bear heavily on the choice of resources and classroom procedures although she thinks they are outside the teachers' control, a premise critically challenged by Kuchah Kuchah's experience as noted in Kucha Kuchah and Smith (2011: 133):

The fact that Kuchah was able to engage in this form of practice with a class of over 200 pupils highlights the inadequacies of beliefs within North contexts that a pedagogy of autonomy is only possible with small classes of motivated learners. Kuchah's story provides support, indeed, for the counter-argument that if Kuchah could engage with students' autonomy in such difficult conditions, other teacher should be able to at least attempt this kind of approach in their own, much more favourable circumstances.

Learners' success experience in Kuchah's narrative could not be analogous to teachers' experience given their agentic roles in the co-construction of the learning contexts. Teachers in such contexts can naturally develop autonomous responses to such difficulties as did Kuchah's learners. The major difficulty in getting them to do this is that, for a long time, teachers *have been made* (our emphasis) to place the problem outside of themselves (Schweisfurth, 2013).

The reason for which teachers have placed themselves out of the problem is double folded. Researchers' intuition about instructional strategies seems to posit the centrality of reduced class sizes in the effectiveness of teaching. For instance, Poole (2005: 52) states that interaction involving focus on form seems optimally suited to classrooms that are small enough to enable instructors to verbally address problems faced by students, through

classroom discussion. He argues that small classes would be needed for students to have significant amounts of peer interaction, both orally and in written form. Sheen (2004) advocates the effectiveness of recast and uptake opportunities in smaller classes. In addition, most experiments on the effectiveness of instruction have very small number of participants in research-based classrooms, giving the reader and/or teacher a cosmetic view of the classroom. Thus, transporting Brian's (the narrator) overhead projector to Kuchah Kuchah's classroom cannot be said to lead to better learning outcomes, at least, on a comparative note.

Teacher training materials used in under-resourced contexts are Western oriented having little or no consideration to the actual learning contexts in the South. This is a commonly neglected side of the story. Research attempts in this regard have been limited to the materials available to learners. It should be borne that most teacher trainers were trained under the influence of Western ideologies and concepts, and the question of contextualizing instructional models has remained highly theoretical to them and has not actually been their interest given the robustness of teacher education in the contexts. It is supposed that 'ELT teachers in Cameroon are not prepared academically and professionally for the new pedagogic expectations that highlight the learner and learning process (Tchombe, 2013). This explains why trainees get to realise the inapplication of teaching methods and techniques only when they get to the field for teaching practice, with no corresponding feedback. Kuchah's enthusiasm and determination 'on the first day he entered his class to use his skills *to make his French speaking learners perfect speakers* (our emphasis) of English' and the fact that 'the size and practical disposition of the classroom, lack of textbooks, and the unbearable temperature' was a new experience to him are clear illustrations of the disconnection between training and practice. It could be argued that the strong correlates between teacher training and teacher performance are checked by other job-related factors. Any teacher preparation that underpins theoretical concepts to the constraints of the teaching/learning environment, or problematises training, succeeds in neutralising the possibilities for tension between the teacher and the context of teaching (Feuer et al., 2013). It has already been noted that teacher quality may be more implicational in student achievement than class size (Dee and West, 2011), availability of resources, and teacher quality (it must be stressed) largely depends on preparation and continuing professional training. In a casual survey of ELT course outlines of three teacher training colleges in Cameroon (carried out at the time of this research), none of them had anything to do with class sizes issues, resources, and even NITCs in a context and era where class size, under-resourcefulness, and information technology are topical points in extant ELT discourses.

Due to a misconception of the relationship between the learners' environment and learning, Western developmental agencies have invested huge financial resources to cause a change. Birbirso (2014: 15) is critical about the embarrassing billions of dollars allegedly spent on a single sector- education, which has led to no corresponding meaningful change in Ethiopia. Although he blames this to the bureaucratic regimes, the problem seems to be the result of the imported view of the concept of change that accompanies the funding. Top-bottom change that is not developed from indigenous experiences is less likely to be sustainable. The IATEFL and the British Council seem to be aware of this lapse and are giving a pragmatic response to the problem. For example, the IATEFL's funding to the Cameroon English Language Teachers' Association- CAMELTA (through its Research Special Interest Group) to collect evidences of teachers' experiences in the 'under-resourced'

Cameroon classrooms has a more psychological influence on the revolution. Through this project, Cameroonian teachers involved in the project, for the first time, have the opportunity to reflect not only on the challenges posed by the nature of their classrooms, but also on the nature of the challenges. This opens the possibilities for hands-on-deck solutions to the supposed challenges. Such an approach marginalises the possibilities of subjugating and disempowering the teacher with top-bottom approaches to teaching. It is an automatic initiation of the teachers into autonomous inquiry into their difficulties, as professionals, which ignites a strong foundational psychological response to the problem. As Richards and Lockhart (2005: 2) note, this process can help achieve a better understanding of one's own assumption about teaching as well as one's own teaching practices; it can lead to a richer conceptualization of teaching and a better understanding of teaching and learning process; and it can serve as a basis for self-evaluation and is therefore an important component of professional development.

This approach to the problem is different from the kind of consciousness that is the result of Western-oriented training as well as that which is informed by the 'outsider' perspective. Such IATEFL initiative in Cameroon conforms with a bottom-top approach to developing a context-specific reaction to what is believed to be problematic in such contexts. Equally, the British Council Hornby School's (see Shamin et al., 2007) provision of opportunities for teachers to reflect and publish context-based reactions to the challenges is a pragmatic response to the problem, especially as those involved in the project tend to be psychologically empowered to overcome the 'under-resourcefulness' or 'difficulty' believed to characterize the contexts of teaching. Unfortunately, such buoyant initiatives are restricted to a limited number of participants who receive new identities after their participation in such projects and, in turn, work harder to become on board any such further initiatives rather than transfer the technology. Consequently huge budgets continue to be spent with only triggering corresponding appropriate effects.

RESOURCEFUL METHODOLOGIES FOR THE 'UNDER-RESOURCED' AND 'DIFFICULT' CONTEXTS

Having argued against erstwhile conceptions of the under-resourcefulness of teaching contexts in the South and seen theoretical arguments in favour of contextualizing ELT methodologies, an examination of some teacher practices in such circumstances gives a practical orientation to 'matching procedures with context' (Tomlinson, 2005). The data discussed here is obtained from a collection of teachers' on-the-spot reaction to the problems they face in 'under-resourced' Cameroonian classrooms coordinated by Richard Smith and Kuchah Kuchah, an extension of the review done by Smith et al. (2012). The data selected for discussion is intended to demonstrate, from a qualitative perspective, the potentials of indigenising ELT practices where local constraints allow limited opportunities for applying fully developed techniques. The participants in the project were ELT practitioners in the Cameroon English Language Teacher Association (CAMELTA). They were required to express the challenges they face teaching in the 'under-resourced' Cameroonian context and report any of their successful lessons in the context in question. The questions addressed by the respondents and which are considered for discussion here are:

- 1) What are the major problems you face in your teaching situation - what is problematic and why?
- 2) Please describe anything you have done to address (some of) the problems in (2) above. Was this successful? Why / Why not?

While the data reveal a lot of inadequacies related to language proficiency of the teachers; the understanding of the nature of language learning; and general teacher quality, our interest in the data is directed towards a few instances of success. The intention is to examine the teachers' creative response to difficulties to posit context-appropriate innovations. A striking issue noticed was that the exaggerated under-resourcefulness expressed by Western commentators was not expressed by the respondents in the project while the frequently stated problems include lack of course materials, low proficiency of learners and managing overcrowded classes. Other issues were only implicitly stated.

In presenting the data, attempts have been made to exclude the problems posed by the respondents where they are discernable from the solutions provided.

LACK OF COURSE MATERIALS

Respondent 2

To address the issue of the lack of textbooks by learners, I begin each academic year by insisting that the students have the books. I use threatening measures like: I will keep you out of you do not have the text, you will not write the first test, I will not mark your paper, I will not register your mark, etc. each time I voice out this threat I find a few more coming with textbooks. This now brings the issue of parental neglect and irresponsibility. By the end of the first two months of school reopening, of the fifty students in class this frightening measure yields fruits and I can have thirty-five books in class instead of the five I originally started with. I judge this my strategy is successful because, of a bench of two students there often two or one textbook available.

Respondent 3

To cope with the situation, I use the following strategies: Assignments are part of annual test grading. Those who lack the textbooks make an effort to beg or buy. Sometimes I write the tasks on the board for them to copy. The success of these strategies has been good and I look forward to better ways of helping my learners in this domain.

Teachers' reaction to the problem of textbook shows that it is the least and even most fragile of problems. The respondents admit the success of using pressure strategies and threats to get the majority of students acquire course materials. For parents to buy course for their children materials upon threats and pressure translates the negligible attention given to education in the whole context. Educational priorities in Cameroon have been displaced by corruption, and having things done through any means tends to be the norm in many situations. This affects the expected attention to learning within the total school contexts as supported by the following respondents:

Respondent 33

The major problem I face is lack of interest on the part of the students. I happen to teach in a locality where there are gold mines and most students prefer going to mine gold instead of going to school. They come to school for formality and look English as not very vital for their future. I also face some difficulties in large classes especially in classroom management. Another difficulty which is most common is lack of text books and research materials for teachers. Above all these, what is really problematic is that of lack of English teachers. I am the only trained teacher and with the bulk of work, it becomes difficult for me to carry out effective teaching.

Respondent 5

Mengang is a purely French speaking area and most of the students' escape from English language classes. Again if the syllabus has to be covered even up to 50%, it should be during the first term because most of them stop schooling at the end of February, most of the girls get pregnant during the academic year, the boys abandon school to ride motor bikes etc. the worst problem is that of course books. The mentality of the people of the area is very funny. It is very normal for parent to come to school, attack a male teacher for refusing to fall in love with his daughter, take home assignments are never done etc.

For parents to show concern for their children's emotional life at the expense of learning materials gives a strategic orientation to cultural variation in Cameroon's educational settings. In a context where education is a means to life, parents will not wait to be presurised to acquire basic textbooks for their children. At any rate, the pressure from the teachers yields benefits without generating any social crisis. This is an opportunity for policy to ensue. Either school administrators develop local policies to get students enrolled for the academic year upon provision of basic course materials or the government takes action towards that. Otherwise, teachers could develop such a strategy to get the students acquire the books. This may not be very successful in very remote areas, but getting half the class acquire books greatly reduces the challenges that are expressed as a result of this. Lack of text books does seem to pose a 'difficulty' as is too often articulated in research.

Kuchah Kuchah got his learners to look for written text as a response to lack of course books (Kuchah and Smith, 2011). Getting students to bring passages or texts to class and designing learning around the materials together with the students reverses traditional classroom roles and responsibilities and tends to decentralise the construction of knowledge. Learners feel excited when encouraged to assume teacher roles, as this provides a horizontal exchange of knowledge that is not constrained by the anxiety resulting from the top-bottom cognitive approach and the monopoly of knowledge that have characterised teaching in such contexts. A similar response to lack of text book is provided:

Respondent 42

After a meeting with other colleagues, we talked about teaching without a text book. In a story telling class I read a story to the class "how the tortoise defeated two giants". It was a primary six story read to form three students. I left out the end and asked the students to write out the story and give it an appropriate end. They came up with beautiful ends. I have used their stories for many different purposes like comprehension, vocabulary and grammar etc. I learned this from Mr. XXX who says he learnt it from CAMELTA in Yaounde. Now I can teach with no text books.

Respondent 140

Unlike in the past where I used to find difficulties in letting students excel in reading due to students lack of interest, especially with no or a few textbooks in class, I could now realize that a good number of them enjoy reading being able to answer set questions, summarize passages well and others. Actually such success was because I had to discover that reading can be done without a text book wherein I had to present the beginning of the story (story interesting ones) asked students to attempt completing the story, following given instructions e.g., complete the story portraying junior as a bad child; as a good child etc. they did drawing, wrote poems, build vocabulary surrounding the story etc. in the end, they succeeded in producing their own passage.

The teacher's approach to using learners' text (also see respondent 42, part two of the data) is based on two methodological stances: Reading for skills development and reading for language study. This deviates from the traditional approach to teaching reading- reading to answer comprehension questions. Thornbury (2006: 192) provides a theoretical backing to the respondents' approach.

He believes that 'classroom reading texts should be exploited, not just for their potential in developing reading skills, but as sources of language input'. Teachers in this context are used to traditional approaches to teaching reading, and thus find the task difficulty for them when confronted with a situation of unavailability of textbooks. Exploring strategies like the ones used by the respondents above reduces over-dependency on text books and the whole question of 'lack of textbooks' tends to be a marginal classroom problem, which must not necessarily be associated with contextual difficulties.

One common course book factor often overlooked is that high dependency on them drives the writer's world view through the learner and even the teacher, allowing very limited opportunities for learners to see the world outside the writer's angle.

They also exercise and foster a dominance tendency over learners and give them very little room to contribute their experience towards certain life concepts in the process of learning. In short, they control what the reader has to know as far as comprehending the texts is concerned. Consequently, what the reader understands from the text tends to be determined by the author's expectations.

This already places the reader at a 'difficult' position. This overall comprehension 'stress' tends to be demystified when learners think they also have the opportunity to control what is to be understood. These respondent's learners were able to generate knowledge with 'beautiful ends', which outsourced the teacher with 'authentic' material to use based on an integrated teaching perspective, a more realistic alternative to text books. The source of the teaching technique may be credited for empowering the teacher, but the learners got more empowerment through the application of the procedures, as they were able to explore and put to bear a panoramic sphere of their experience using language at the most comprehensible level.

THE QUESTION OF LOW PROFICIENCY

Low proficiency of learners has been cited in the literature as a characteristic feature of learners in under-resourced contexts. Proficiency is determined through the learner's ability to

handle target tasks and is usually measured against the Council of Europe's Common European Framework of Reference for languages. Learners' proficiency determines the level of language they have acquired and enables stakeholders to place learners with similar abilities in the same levels of study. This is not the case with mainstream schools in the South in which language learning levels are determined by holistic educational competences and not by the learners' language proficiency. The consequence is to have classes of extremely mixed abilities. This appears to be what renders the contexts even more 'difficult'. This was articulated by some of the respondents and an analysis of their opinions is necessary to verify their current assessment of the issue and how they deal with the challenges.

Respondent 41

For the problem of reading that is pronunciation of words, I as a teacher use letter cards and word cards to teach the pupils during lessons. I also give them home work on sounds and words building to take home and practice. I was successful to an extent in that those pupils who are present in school everyday do repetition before our next lesson. Not also successful to an extent in that some pupils are not regular in school so by the time they come back, they have forgotten what was taught.

Respondent 38

Concerning spelling, they know the vowel sounds and consonants. I do spelling and mental drill every morning with them. Concerning handwriting I make sure they use the red and blue line very well that of a child makes a mistake by not writing well I will ask him or her to rewrite and so they do improve.

Respondent 49

The problem of sounds and word building. This is because most of the pupils did not have a good foundation in sounds. Some of them were taught the letters of the alphabet and not the sounds. Children not having all the necessary materials needed some children are also underage which makes understanding difficult.

Those with this problem are asked to bring 20 leave exercise book to use for follow up activities, We have started with the sounds of the alphabet and identifying them. To an extent it is successful because some of them can now sound and identify the different sounds of writing materials I have sent a note to all the parents and they are responding.

Respondent 30

The main problem is the language. As a teacher of English language to French-speaking students, I find myself repeating the same things without being able to make the students understand. They will either say "Madame on ne comprend pas l'Anglais" or "C'est Dieu que donne l'Anglais." What is problematic is that I am sometimes forced to translate certain words for them to understand and I don't think I help them by translating each time.

Some of my translations and summaries have helped some students to understand certain things better. As they say, "Ah! Madame on comprend maintenant", "Donc c'était ça?" It has also helped them to feel relaxed in class and to feel free to ask questions.

Deriving from the respondents' reactions, a series of strategies are believed to have been used by the teachers to deal with problems arising from mixed abilities and low proficiencies. The most important aspect of the strategies reported is the teachers' abilities to identify and problematise and seek attempts at addressing the issue without expressing a sense of frustration. Respondent 38 and 41 are able to rate the effectiveness of their instructional strategies - a routine rubric of spectacular reading activities and mental drills- from the progress their learners make in the identified areas. Respondent 49 identifies learner-instruction matching as a way of paying attention to learners' particular proficiency needs in the classroom while Respondent 30 uses grammar translation to cause noticing and create motivation in order to influence learners' proficiency levels. Although the variety of strategies used to deal with low proficiency and mixed abilities problems might have been borne out of the need to deal with context-specific classroom difficulty, they expose the teachers' desire to furnish *extra efforts* to deal with classroom challenges than may be needed in standard classes (also see Respondent 6 in part two of the data). The type and degree of extra efforts needed can only be determined by the nature of the problem as rated by the teacher. This is the positive advantage of the reciprocal correlates between large class size and teaching (Blatchford et al., 2003). It would be very surprising to get any of the teachers (respondents) tell you when it is appropriate to use any of the instructional techniques they used prior to their exposure to the challenges. Thus, their success is not the result of application of any theoretical knowledge but the natural need to deal with a challenge.

CLASSROOM MANAGEMENT

Classrooms are social communities with multivariate activities and behaviours that co-construct learning in particular ecologies. Learning in the classroom is dependent on natural factors related to classroom and the school environment in which learning takes places, learners' background, motivation, and the broader community influences (Ehrenberg 2001; Blatchford 2003). Thus, stressing the correlation between class size and achievement has been criticized for not only being reductionist in design but for reducing the classroom to an artificial world in which humans can be controlled for experiments. Managing classrooms may not always require discipline-specific knowledge. This is proof that more humanistic approaches may be more responsive to what is identified to be classroom difficulties. Research has undoubtedly demonstrated variables which affect classroom management when classes are large: teaching time, groupings, attention to students, pupil control and marking, planning and assessment (see Blatchford, 2009, for example).

It has already been stated that children in large classes are twice as likely to be off task given that the larger the class, the more distracted the children (Blatchford et al. (2003); Blatchford et al. (2011); Schanzenbach (2014)) leading to estimated unproductive learning outcomes. There is a usual tendency to associate lack of engagement in learning with negative outcomes, as students in larger classes tend to feel more anonymous and are therefore more

likely to not stay engaged with the material (Gleason, 2010), although the effects of lack of engagement on outcomes in online learning were found limited in Gleason's study. The opportunities for interaction, willingness to interact and the time required for interaction are believed to be largely marginal in large classes compared with the occasions provided by small classes (see Laria and Hubbell, 2008 for specific details). Blatchford et al. (2003) noticed that, in a large class, children interacted more with each other and spent more time not interacting. The challenges faced by the respondents all point to the compounding classroom management variables stated above. Apart from group work, which was noted to a characteristic reaction to management problems in the classroom, some less commonly-stated strategies were noticed.

Respondent 50

The major problems I faced were class room management, classrooms that are too populated, some teaching methods and the noise makers and inattentiveness. It was a problem because when the class room is too populated; many pupils will not really concentrate especially the back benchers. Many of them will be disturbing or doing something else thus losing attention in class leading to failure.

Firstly, I make the classroom to be lively, at times I ask them to sing some short or common songs for relaxation. Secondly I will tell them that if anybody pays attention in class when the teacher is teaching he/she is going to pass well and I will also give the pupils a gift such as pen, pencils, ruler book to be using. With this they will be attentive in order to receive the gift promised.

Respondent 65

Behavioural problems from the students indecent attitudes like disturbance, noise making, poor sentence structure, wrong use of the capital letter, lower and upper case letters.

As to the problem of disturbing during the lesson, I swap the seats of such students. Also, as concerns poor sentence structure, wrong use of lower case and upper case letters, emphasis has been made. All these measures have been successful to an extent.

Respondent 94

The main problem is that some of the pupils are not serious as well as being attentive in class and they also speak a lot of Pidgin English in class. As a result of that it is a problem because they cannot speak as well as construct good statement in English.

Concerning the problem of Pidgin English I have tried to upgrade them by explaining to them how to use the various tenses. Also the problem of not being attentive in class has also been solve as at the beginning of each lesson I first of all captivate

learners interest by singing, dancing, presenting of attractive and colourful pictures and flowers. As all those has been done all east there is a big change.

Some of the strategies used by the respondents- such as changing sitting positions- to deal with classroom management problems have been identified by Shamin et al. (2007: 27). Other non-cognitive strategies used by the respondents (singing, dancing, using pictures, and giving incentives to learners) to attract learners' attention unconsciously breach the gap between classroom atmosphere and the learners' ordinary day-to-day experience. To the best of our knowledge, there is no evidence suggesting their effectiveness with regard to learning outcomes, yet the strategies used by the respondents help to reduce anxiety in the classroom and could be a good approach to initiating the learners into the cognitive rhythm of the lesson. The strategies also create variation in the classroom. In standard class size contexts, many teachers have developed robust teaching strategies and tend to neglect the value of variation in teaching strategies even when class size changes (Laria and Hubbell, 2008). It is hypothesized that teacher quality could undermine traditional positions on the effects of class size (Dee and West 2011), although what counts as teacher quality remains contentious. Teachers' abilities to handle classroom challenges have been reduced to language proficiency and awareness in theoretical issues in language pedagogy. This explains why it is suggested that teachers with high value added on standardized test scores have an impact on subsequent outcomes for their students as wage earnings (Schanzenbach, 2014).

The techniques used by the teachers have very little to do with the indicators used to verify teacher quality, yet they were able to come up with means of dealing with classroom challenges based on experiential judgement. It is not very difficult to assign such techniques (as giving incentives to learners) to a theory or methodology although sustaining such strategies would entail empowering the teachers with the resources to use- a more difficult option for stake holders. Techniques of that sort may be challenged for conditioning attention in the classroom. However, giving incentives to learners has been noted to be a productive feature that promotes learning (Bain et al., 1989) and could specifically be associated with its value to enhancing effectiveness on time-on-task and solving attentional problems related to class size and management. This falls within the framework of instrumental motivation, which can be fostered through crediting learners with marks instead of material gains.

The respondents in the project used the commonly-stated group work as a management technique. This has been proposed as an effective way of managing large classes (Baltchford et al., 2003; 2009; Shamin et al., 2007). The idea of group work has been a proper classroom management strategy initially associated with standard class sizes and has only been appropriated by teachers for use in large and under-resourced classes on a need basis. The relationship between number of groups per lesson, group size, and teaching time has been examined by Blatchford (2009). However, one way teachers might make the most of classes is to consider helping learners towards effective group work (Blatchford et al., 2003). It is estimated that teachers find it difficult manipulating these variables due to class size reduction orientation during teacher preparation (Wilson, 2002). It is therefore important to design teacher training programmes both initial and continuing to consider ways of adjusting productively to contextual features like class size (Baltchford et al., 2003).

CONCLUSION

The need for English Language competences to meet communication needs on the global scene has prompted methodological innovations in language pedagogy. The pressure to satisfy international requirements of English has pushed experts to develop strategies whose application in the expanding contexts of English is not given sufficient attention. Sheen (2004) argues for smaller class sizes to ensure interaction in the classroom; Poole (2005) thinks that form-focused instruction is suited in smaller classes; Schwesfurth (2013) observed the impracticability of implementing learner centered education in low income countries. Yet class sizes in the Southern hemisphere continuously get larger and are said to be under-resourced to the extent that the contexts are believed to be 'difficult'. Recent innovations in teaching have sought to demonstrate that such understanding show a limitation in the relationship binding teaching/learning and contextual factors. Blatchford et al. (2003) proposes learner-learner interaction as a response to large class size; Kuchah Kuchah and Smith (2011) argue for pedagogy for autonomy; a correlation between teacher-led interaction, learning styles and learners' proficiency is argued to favour learning in rural contexts (Ekembe 2014). Equally, some aspects of pedagogical practices may be more responsive to such contexts than others. In all, the best way forward is to try to fix the broken cycles of implementation which have proven barrier (Schwesfurth, 2013).

Drawing from a range of strategies used by the teachers sampled by the Kuchah Kuchah and Smith research, there seem to be an unconscious emancipation from imported methodologies driven by the need to survive amidst the constraints posed by local realities rather than by the need to meet methodological deadlines. One of the respondents admits that there is always a way out, as if to confirm Maley's (2001) position that a few economic deprivations do not suppose emptiness of the context. It is possible to imagine that teachers in such contexts would do better in well-resourced and standard classes if given the opportunity, yet no causality of effects has been proven in the literature this far. The claim that the contexts are under-resourced may not be very much related to adequacy and sufficiency of resources. It seems rather to be more related to some sort of psychological constraints driven by cognitive limitations of adapting Western-driven pedagogies in different contexts of learning. To provide a more context-based solution to the problem, although it may be radical to get learners involved in making decisions of content and methodology, a sound understanding of their needs and expectations, of their abilities and difficulties, of the realities within which they operate is very important in taking decisions that will affect their education (Kuchah Kuchah, 2008: 217).

Equally, the mutual collaboration between teacher education institutions and practitioners in redesigning teacher preparation programmes to train teachers suitably apt to address the realities of educational contexts could easily dilute the thinking of under-resourcefulness and difficulty. In such a situation, the whole question of under-resourcefulness and difficulty may not hope to find answers in the provision of resources; use of standardized methodologies; and reduction of class sizes, but rather in teacher responses to the situation.

The intention in this study has not primarily been to analyse the data, but to draw from a few samples to demonstrate how methodological incompatibility with contextual features has pushed teachers to develop automated behaviours in the face of constraints believed to be characteristic features of classrooms in the South. It is necessary to complement this with a

quantitative design to be able to determine the prominence of various problems and to collocate instances of innovative responses to the problems with more qualitative evidences. This is needed to paint a clearer picture of how indigenised ELT strategies tend to address the supposed difficulty of the context of teaching and learning.

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Chapter 48

‘FROM MICHELANGELO TO PICASSO’: IMPLEMENTING THE CLIL APPROACH IN A FOREIGN LANGUAGE PROJECT

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ABSTRACT

Having considered the data of previous studies related to certain benefits of CLIL on students' linguistic and cognitive development, a project was piloted with 6th grade students (aged 11-12 years) of an experimental primary school in Northern Greece. The project, *From Michelangelo to Picasso*, aimed at introducing some aspects of cultural history in an alternative way and creating an educational environment that favors the art experimentation and expression in EFL (English as a Foreign Language). The project comprised 10 thematic axes that included all the important artistic movements from 15th to 21st century: "Renaissance", "Baroque, Rococo", "Neoclassicism, Romanticism", "Realism", "Impressionism", "Post-impressionism", "Expressionism, Fauvism", "Cubism, Abstract Art", "Surrealism", "Contemporary art (Abstract Expressionism, Pop Art, Performance, Installation, etc.)". The project was carried out in three stages: a. The 'Pre-task' stage, where the students were introduced to the historic, artistic and ideological framework and the key-artists of each artistic movement. b. The 'Task-Cycle' stage, where the students were engaged into various group tasks involving experiential learning, problem solving and creative expression. In such an activity-based context students were exploring, communicating, and elaborating content knowledge in the target language. c. The 'Language Focus' stage was carried out in a game-based context. Activities such as role play games, pantomime, creative workshops, exhibitions, artistic presentations, quiz and puzzle games, debates, empathy were at the core of every thematic unit. In order to estimate the effectiveness of the project, multi-method approaches were employed such as, content-specific and FL pre/post tests, role playing, journals, portfolio and questionnaires. The data suggested that the CLIL module contributed to improving specific vocabulary and enhancing students' communication skills. Concerning the subject matter, they expanded their knowledge on history of art

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approaching experientially and creatively the artistic, historical and ideological framework of the development of art in the western world.

Keywords: CLIL (Content and Language Integrated Learning), Art Education, EFL, game-based learning, task-based learning

INTRODUCTION

During the last decades there has been a growing interest in promoting multilingualism and plurilingualism in the European Union, so that European citizens are able to respond to the high demands of our society (Popescu, 2008). In line with this goal a variety of teaching approaches have been proposed, with the Content and Language Integrated Learning (CLIL) being at the core. CLIL is an umbrella term used to describe an innovative teaching approach where subjects or parts of subjects are taught in a second/foreign language (L2/FL). This educational approach aims at promoting the simultaneous learning of a target language and the content of a subject (Marsh, 1994) in an attempt to improve students' language skills and enhance their content knowledge. CLIL can be applied to any level of education, from primary to higher, by teachers who are native or non-native speakers of the target language (Marsh & Hartiala 2001 c.i. Jäppinen 2005) with the purpose to promote the active construction of knowledge through students' participation in meaningful tasks and their collaboration and interaction with the classmates (Vilkancienė, 2011).

Recent research has indicated that the CLIL approach is beneficial for the students in their attempt to improve their language skills (Calviño, 2012; Fuentes, 2013; Griva & Kasvikis, 2015; Korosidou & Griva, 2013; Várkuti, 2010; Vilkancienė, 2011; Yamano, 2013). More specifically, students in CLIL classes proved to become more fluent speakers and communicate much better than their non-CLIL peers (Alonso et al. 2008, Admiraal 2006, Harrop 2012; Dalton-Puffer, 2008). The development of students' communication skills is attributed to their increased exposure to the target-language through authentic content and in authentic communicative context. In such a context, students become more motivated to use the target language in order to interact with their classmates and complete the highly demanding tasks assigned to them (Vilkancienė, 2011), as well as they become more flexible communicators in real life situations (Dalton-Puffer, 2007; Lasagabaster & Sierra, 2009). Furthermore, CLIL students seem to have a clear advantage in terms of their receptive skills in L2/FL, general and specific vocabulary acquisition, and oral language skills (Dalton-Puffer, 2008; Korosidou & Griva, 2013; Paradopoulos & Griva 2014; Sánchez Pérez & Salaberri Ramiro, 2013).

Although some concern has been expressed by educators about the learning outcomes, when teaching a school subject in a FL (Hajer 2000 c.i. Dalton-Puffer 2008), CLIL programs have so far proven such claims as ungrounded. Research outcomes have revealed that the implementation of CLIL approach does not affect negatively the subject-matter knowledge (Admiraal, Westhoff & de Bot, 2006; Jäppinen, 2005; Papaja, 2008; Stohler, 2006; van de Craen, Ceuleers & Mondt, 2007; Vilkancienė, 2011). On the contrary, CLIL students' performances in the subject content were higher than their peers who were instructed the specific content in their mother tongue (L1), through a traditional teaching method (Dourda et al., 2014; Jäppinen, 2005; Griva & Kasvikis, 2015; Mattheoudakis, Alexiou & Laskaridou,

2014; Papadopoulos & Griva 2014). The reason behind this outcome is that the highly demanding tasks assigned to CLIL classes motivate students to work harder, and resulted into activating higher order processes and as a result developing cognitive skills, meta-cognitive skills and academic language skills (Bonnet 2004; Dalton-Puffer 2008).

Furthermore, CLIL projects have often been associated with the promotion of cultural awareness (Gimeno et al., 2010; Griva & Kasvikis, 2015; Harrop, 2012; Kiraz et al., 2010; Pavón, Vázquez & Ellison, 2013; Popescu, 2008). Language and culture are strongly interrelated, but this does not necessarily mean that children become culturally aware through language classes. However, students in a CLIL class use the target language to communicate with their counterparts and explore the content of the subject-matter. When the content knowledge of CLIL projects is related with aspects of cultural diversity or the CLIL classroom consists of children of different cultural backgrounds, there are many opportunities for students to be aware of multiculturalism. In that way, they understand deeper not only the others but also themselves, as they obtain the ability to communicate with people from different cultural backgrounds and establish various kinds of cultural exchange (Gimeno et al. 2010). For example, the implementation of a number of pilot CLIL projects interweaving learning a second/foreign language with learning history and culture revealed students' development of cultural awareness and their deeper understanding of cultural diversity (Griva & Kasvikis, 2015).

THE STUDY

Rationale and the Objectives of the Project

Taking into account the aforementioned results from a number of CLIL projects both on international and national level (Admiraal et al., 2006; Griva & Kasvikis, 2015; Jäppinen, 2005; Korosidou & Griva, 2013; Lasagabaster, 2008; Lasagabaster & Sierra, 2009; Stohler, 2006; Vilkancienė, 2011; Yamano, 2013), we decided to design and implement a pilot CLIL project entitled "From Michelangelo to Picasso". It aimed at introducing History of Art, from Renaissance till present, and improving the students' competence in English as a foreign language (EFL).

The reason for having chosen that specific content was that 'Art Education' is not strongly promoted across the Greek Curriculum (Kasvikis, 2010), despite the fact that 'art' is claimed to contribute to the children's aesthetic and overall development (Chapman, 1978). Art appreciation is generally considered to be "the desired outcome of art education" (Barret, 2007) and entails the valuing the worth of a work of art through an extended and guided study that includes the "acquisition of knowledge related to the object, the artist, the materials used, the historical and stylistic setting, and the development of a critical sense" (Hurwitz & Day, 1995, 309–310, cited in Barret 2007). These elements were incorporated in the activities during the implementation of the CLIL project.

The purpose of the project "From Michelangelo to Picasso" was twofold, since an attempt was made to improve students' EFL skills and competence, and enrich their knowledge on the artistic movements from 15th to 21st century.

More specifically, the CLIL project aimed at:

- developing the students' receptive and productive skills in EFL
- improving their communicative competence in the target language by creating authentic learning environment
- enriching specific vocabulary
- familiarizing the students with and making them aware of aspects of 'art history'
- motivating them to appreciate 'art' and developing their creativity

Participants

The sample of the project consisted of twenty three 6th grade Greek speaking students (aged 11-12 years) attending an experimental primary school in Northern Greece. Seventeen of the students involved in this project were girls, while the rest six students were boys. The students' English language competency level was identified as A2+ (Elementary Level) according to the CEFR (Common European Framework of Reference for Languages).

In order to obtain information about the students and estimate their needs and preferences in FL learning and art, a needs analysis instrument was distributed to them before the implementation of the project. According to the findings, fifteen of the total number of students reported that they had been learning French and eight of them German. Some of them also claimed to speak other languages such as Italian (8 students), and Spanish (4 students). Regarding the difficulties they encounter in English, most of them reported 'grammar' (8 students) and 'vocabulary' (5 students) as highly demanding areas, while three students stated that they encountered difficulties in speaking and writing skills in EFL.

In relation to their attitude towards 'art', most of the students (19) stated that they like it very much, while only 4 of them expressed a different opinion. When they expressed their feelings about 'art', they regarded it as an interesting activity (8), aesthetically beautiful (3) and creative (3). Finally, regarding the ways they can obtain information about it, most of the participants mentioned that they could learn about art through the internet (9students) and museums (8students) or during trips (8students). A few of them (3students) reported school as a major source of getting information about it.

Design of the Project

The project was designed following five basic principles: communication – cooperation - interaction – conceptualization - creation. The design of the module "From Michelangelo to Picasso" was an attempt of an alternative educational method to respond to the potential of CLIL, within the existing national curriculum. It is a communicative oriented module aiming to make children acquire artistic knowledge as well as create and communicate in the target language. Since a *topic-based* approach was followed, the teaching module: "Western art" from 15th to 21st century consisted of ten thematic units:

- Renaissance: in this unit the students became acquainted with the most famous artists of 15th-17th century and their paintings that made a great impact on the nature of art of that period.
- Baroque, Rococo: during this unit the students elaborated on the artists of the Baroque and Rococo movements, their paintings and the artistic features that distinguished them from their predecessors.
- Neoclassicism, Romanticism: In this unit the students came in touch with these two artistic movements and elaborated on their differences and their basic characteristics.
- Realism: the specific unit was related to making children understand the underlying characteristics of Realism, such as the basic themes and the sources of inspiration of its most important artists.
- Impressionism: the unit about Impressionism focused on the painting style of this specific movement, its differences from the previous ones, its main artists and the themes of their paintings.
- Post-impressionism: in this unit the children elaborated on the four basic artists of Post-impressionism, their style and their main sources of inspiration.
- Expressionism, Fauvism: this unit focused on the main feelings of the Expressionist movement (anger, sadness, pain fear) and the sociopolitical characteristics that led to its emergence. The students also became acquainted with its main artists and their most famous paintings.
- Cubism, Abstract Art: this unit aimed at analyzing these two artistic movements. Attention was paid on their basic elements, their style, their most famous artists and some of their most characteristic paintings.
- Surrealism: the unit about Surrealism focused on the reasons that led to the emergence of the movement on the context and on the main sources of inspiration of its artists. Some of these artists and their contribution to art were also introduced to the students.
- Contemporary art: in this final unit students came in touch with the artistic movements after WWII and the current trends of art (Abstract Expressionism, Pop Art, Performance, Graffiti, Installation).

The aforementioned units were designed on the basis of Gombrich's seminal book "The Story of Art" (1995). Each intervention aimed at familiarizing the students with the historical, social and cultural factors that lead to the emergence of these artistic movements and helping them understand their contribution to the Western Art. A coherent presentation of the development of art during the last 7 centuries is not appeared in Greek Primary education as only a number of sporadic references to paintings, artists and movements of that period can be traced randomly in some of the Language, History and Visual Arts textbooks.

The 'activities' were selected to provide a structured framework for getting children actively involved in the learning process and participating in communicative activities. The need for well-designed group activities and games seemed to be of a great significance in order to create an authentic environment, where the students would use the language to achieve real life communicative goals and solve 'real life' problems. The activities were designed taking into account: a) children's interests, cognitive skills and prior knowledge, b) certain criteria for "good" language learning tasks, such as drawing objectives from learners'

communicative needs, allowing for different solutions depending on learners' skills, involving learners' contribution, being challenging, providing opportunities for target language practice (Candlin, 2009). Learning while playing is the best way to learn a language, because it creates emotional attachments and it focuses on children's participation and enjoyment in a relaxed context (Dryden & Rose, 1995; Griva & Semoglou, 2013).

More specifically, the selected activities were organized in a way that would help the students develop their:

- *language and communication skills*: through the presentation and description of their works of art, the argumentation on their points of view and the collaboration and interaction with their classmates.
- *cognitive skills*: such as critical thinking, through their participation in tasks where they would associate and compare details of various and different pieces of art.
- *cultural awareness*: by familiarizing the students with aspects of art and culture from Renaissance till present, and raise their art appreciation.

Implementation of the Project

The project was launched, in the school year 2013-2014, at an experimental primary school in Northern Greece. The interventions lasted for four months, from the beginning of February till the end of May 2014. On June 11th 2014, the students organized a 'Museum of Art', where they exhibited the paintings they created during the project.

The project consisted of 10 three-hour interventions, following the principles of task-based learning. Thus, it was carried out in a "task-based" framework (Willis, 1996), with the cooperative activities being at the core of the project, where the children were provided with opportunities for active participation and cooperation while making decisions and creating their products. The tasks were distinguished between a *macro-task* (e.g., create a painting, an art product), an *intermediary task* (e.g., 'organize a debate or a role play') and a *micro-task* (e.g., vocabulary/ specific vocabulary games)

Every intervention was performed through three phases:

Pre-Task Phase

This stage encompassed the following steps: a) introduction to the topic in a multisensory learning context (e.g., stories, ppt, video clips, films, songs), b) contextualization of the task (through pictures, realia, art evidence, etc.) c) exposure to specific language.

One of the basic objectives of the pre-task stage was the students being gradually capable of comparing pieces of work from different artistic traditions and identifying to which art movement they belong. That would lead to students' deeper understanding of similarities and differences of those art works, as well as to students' awareness of the contribution of those paintings to Art.

More precisely, a Power Point presentation was always the tool to accomplish the introduction to the topic. Furthermore, an effort was made to activate the students' background knowledge, so that they could associate the details about the different 'art movements' more easily and understand better the reasons of their emergence. Multimodal

teaching material and aids, such as videos, pictures and music, was used in order to help the students acquire the new content knowledge and stimulate whole class discussion in the target language.

Given the fact that English was used as the language of instruction and of the PP presentations, a bilingual vocabulary sheet, including the specific vocabulary of each unit, was distributed to the students. Also the sheet incorporated certain expressions the students could use when getting involved in different activities.

At the beginning, a timeline was used in order to specify the period when each one of the 'movements' took place. In that way, the students could take into account the general characteristics of that era and how those features had an impact on Art. Moreover, emphasis was placed on elaborating on the individual features of each 'movement' with special focus on asking the students to compare a painting of the artistic stream presented during that lesson with one of the previous sessions in order to be aware of their similarities and differences.

When students' awareness of the aforementioned characteristics was ensured, the most important artists of each movement were presented along with some of their most famous paintings. Both the artists and the paintings were presented in the target language (EFL) by the teacher, and the children were asked to identify certain features of the artists' technique in the paintings in the target language or code switching in L1 (first language) when encountering language difficulties.

After the completion of the presentation, whole class discussion was being held. Children were provided with the opportunity to imagine what they would paint if they were painters of that period, and to discuss about their influence by the society of that era, as well as the messages they would like to express and transmit through their artistic works they would construct in the "task cycle" phase.

Task Cycle

In this stage the teacher splitted the class into groups, who were encouraged to use the target language creatively and spontaneously through participating in a 'macro task' in groups. Those communicative tasks offered the students various chances to use the knowledge they had already acquired during the pre-stage or the previous lessons (Ruso, 2007).

The students were requested to create a painting in accordance with the artistic movement/-s presented in the pre-stage. The children, in groups, had to work together on a common task, helping each other and interacting with each other in the target language during "problem-solving" negotiation and assuming responsibility for contributing to the creative task.

After the completion of their 'products', they participated in different communicative activities, such as 'role-playing', where the children pretended to be artists of a specific artistic movement and were asked to present their paintings and/or themselves, etc. b) 'debates' between representatives of 'opposite' movements or c) 'exhibitions', where the students of a group expressed their opinion about different paintings of their classmates. Below, we present some representative communicative tasks/activities included in that stage:

Neoclassical vs. Romantic Painter

The pupils had to choose one of these movements and create a painting in accordance with its technique and the most common themes. When the paintings were completed, the

students who stranded for ‘Neoclassicism’ formed a larger group with those who stranded for ‘Romanticism’ forming another larger group. The “artists” of each group, who belonged to two larger groups representing “Neoclassicism” and Romanticism” respectively, should present their paintings and the movement they belong to, and then argue about its ‘superiority’ over the opponent movement.

Paint the Emotions

The students had to choose one of the four basic feelings (pain, fear, anger, and sadness) depicted in Expressionist paintings. Then, they had to create a painting based on that feeling, however maintaining the basic features of the specific movement. Upon the completion of the paintings, the students showed their creations to their classmates who had to guess what the depicted feeling was. Then, each “artist” had to justify the choice of the specific feeling.

Cubism or Abstract Art?

Depending on their preferences, the students should create either ‘cubist’ or ‘abstract’ paintings. Those who wished to make use of the collage technique (Cubism) could have a range of materials at their disposal (newspapers, magazines, fabrics, glue, scissors). Once they finished their paintings they had to give a title to their paintings and exhibit them to the class. Each student should choose three paintings (except his/hers of course) and write on a piece of paper the title of the painting, its creator, the movement to which he/she thinks it belonged and three words that he/she thought best characterized the creation.

Dreams Come True

The students were asked to remember one of their weirdest dreams and paint it. Upon the completion of their paintings they had to name them and present them to their classmates. Then the class voted for the most successful “Surrealist” paintings, and the students were divided in two groups. Each group was asked to write a version about the ‘history’ of the painting.

Follow Up Phase

In this stage, the teacher picked up and drew attention to relevant language and semantic points and made children recycle new vocabulary, specific vocabulary and content-knowledge by getting them involved in some micro tasks, such as games, puzzles, etc. in a game-based and relaxing environment (language focus). Different kinds of games were included, such as board games, knowledge quizzes, guessing games, games, physical activities, etc. all of them involving collaboration and interaction in the target language (Griva & Semoglou, 2013).

Furthermore, the teacher gave feedback on the content and quickly reviewed what was presented; meanwhile, the students voted and chose their preferred task. Below, we present some representative communicative tasks/activities included in that stage:

Artistic Buzz

The students were divided in two groups in order to take part in a ‘knowledge – based’ quiz. That game, presented through PowerPoint, included 18 questions related to the features of ‘Baroque’ artistic movement, its artists and their most known paintings. The students had

to listen to the question carefully, and then the team who firstly yelled “Buzz!!!” had the opportunity to answer. For every correct answer each team gained one point, but if the answer was wrong, the opponent team had the chance to talk and win the round. The group with the major number of points was the winner of the game.

Top Ten

The class was divided into four groups of six students. The teacher mentioned the name of an artist. Each group had three minutes time to think of ten words or phrases related to the specific artist. For every correct word (or phrase) each group gained a point. If one of the groups found a correct word in the target-language, and that word had not been mentioned by the other groups, then that group gained an extra point. The group with the highest amount in points was the winner of the game.

The Puzzle of Impressions

The students were divided into two groups, the ‘green’ group and the ‘blue’ one. Each group was given eight pieces of painting. Behind each piece there was a multiple choice question regarding the artistic movement of ‘Impressionism’. Each group had to find the correct answers and then to match the pieces of the puzzle. Upon the completion of the process, the students had to find the name of the painting. The winning group was the one who had given the greatest number of correct answer.

Trivial Pursuit

The class was divided in two groups. A board of 30 numbered squares was presented on the wall, through a projector, including the pawns of each group. The students were given a dice. Each group rolled the dice and moved its pawn according to the number of the dice. Then the students were asked a question related to the artistic movement of ‘Post-Impressionism’. If the answer was correct they could move their pawn two positions ahead. If the answer was wrong, they had to move their pawn two positions back. The winner was the group that arrived first at the final point.

Personating Expressionism

The class was divided in two groups. Each group appointed an opponent player to pantomime, ‘describing’ one of the paintings or artists of the ‘Expressionist’ movement. The player had to use gestures and extraverbal behavior in order to help his/her group find the painting or the artist. However, he/she could not use some words, such as the name of the artist or words included in the name of the painting. Every player had two minutes at his/her disposal, so as to accomplish his/her goal. Each group gained one point for every correct guess. The group with the major number of points was the winner of the game.

Sit First

The students were divided in two groups. Two chairs were placed in front of the blackboard. Each group picked one of its players. The two players stood in front of the chairs. Afterwards, they were asked a question regarding the artistic movement of ‘Cubism’ or ‘Abstract Art’. The player who sat first on his/her chair had the opportunity to give an answer. If the answer was correct, he/she gained a point. If the answer was wrong, the opponent

player had the chance to give the correct answer and gain the point. During each round, different players took part in it. If during the game one of the other students gave away the correct answer, then his/her group lost one point. The group that obtained the greatest number of points was the winner of the game.

Taboo

The students were divided in two groups. Each group chose one of its players. The player was given a card that included the word (or phrase) that his/her group should find out! The word was related to the artistic movements of 'Contemporary Art'. In addition, underneath this word there were three more words that the player should not mention in his/her attempt to describe the one above. Each player had one minute at his/her disposal to accomplish his/her goal. When the time ran up, a student of the opponent group was called to play. At each round the players were different. Every correct 'guess' credited a point to each team. The group with the major number of points was the winner of the game.

The Museum

Shortly after the implementation of the project, an Art Museum was organized by the students in cooperation with the teacher, where the students exhibited the paintings they had created during the interventions. A total of 220 works-products were exhibited representing the different 'artistic movements' they had known during the interventions.



The museum was open to all the visitors who wanted to attend it and honor and admire students' work. Thus, a lot of people were gathered, including students' parents and friends, as well as people who happened to pass by and wanted to watch what the children had created.

The event attracted even the interest of the local press, and some photos were published in the local newspaper.



Evaluation of the Project

In order to examine the feasibility of the project and its impact on children's language skills and content knowledge development, an estimation study was conducted by using the following tools:

a) Pre-Test/Post-Test

A Pre-test and Post-test in relation to content knowledge and target-language, which used the same components, were administered to the children individually at the beginning and after the completion of the project. The tests referred to the same skills, so that we could have the best possible information about the influence and the effectiveness of the project. They consisted of two parts: a) the first part included 15 multiple choice questions in English related to the movements, artists and paintings of the interventions. Those questions meant to identify students' knowledge about art and specific vocabulary skills before the implementation and after the completion of the project.

The second part included two open ended questions in English that the students had to answer in the target language: a) do you like art? why? b) do you like painting? What would you like to paint? This part of the test aimed at identifying the students' general and specific language skills before and after the implementation of the project.

b) Questionnaires of Satisfaction

The researchers encouraged students to feel free to answer the questions in the questionnaire distributed to them upon the completion of the project. Its purpose was to record students' attitudes towards the project identifying if it responded to their interests and expectations.

The questionnaire comprised of eight questions related to the students' views on the interventions and the contribution of the project to the improvement of FL skills and the enrichment of the content knowledge. The students were invited to express their overall experience of the project. They were asked to indicate the extent to which they liked or disliked on certain statements on a four-point Likert-type scale. Some questions included in the instrument were the following: a) what do you think of the lessons? did you like them? b) what did you like most of what we did? (presentations, painting, games, which games?), c) what didn't you like so much? d) what did you find more difficult? e) what would you like to do more during the lesson? f) did the lessons help you improve your language skills in English? g) did the lessons help you enrich your knowledge about art? h) would you like to participate in this project once again? Why?

c) Teacher's Journals

Throughout the project journals were kept by the teacher once a week in order to reflect on learning and teaching issues. It was designed and applied with the purpose to gain an in-depth understanding of the implementation and monitoring of the CLIL project, since it was regarded as a means of generating questions about teaching and the dual focused learning processes. Journals have been proved to be valuable tools for the improvement of the teaching process (Avgitidou, 2011; Baurain, 2010; Georgopoulou & Griva, 2012; Moreland, 1997; Ojanen, 1993; Qing, 2009; Richards, 1991) as they provide teachers with the opportunity to reflect on their practices, feelings and thoughts (Yinger & Clark 1981 c.i. Moreland 1997).

The questions included in the journal were divided into three main groups:

a) Questions Related to the Dual Focused Teaching Process

- What teaching methods and aids did I use during this intervention?
- Did I encounter any problems during the CLIL approach? Did something unusual happen?
- Which parts of the CLIL teaching were more successful? Which ones were not? Why?

b) Questions Related to Children's Behavior during the Project

- What did the students like/dislike?
- What did the students find most difficult?

c) Questions Related to the Teacher's/Researcher's Reflection on the Project

- If I had the chance to teach the same thematic unit again, what changes would I make?
- Did the lesson achieve the goals that were set in advance?

RESULTS

Pre/Post-Test Measurements

The mean scores of the students' performance during the multiple choice part of the Pre/Post-test measurements suggest a strong effect of the project on their knowledge about 'art' and 'history of art', since most of them showed a significant progress between the two measurements. The paired-samples t-test indicated that there were statistically significant differences between the two tests ($t = 8.6$, $df = 22$, $p = 0.000 < 0.05$). Specifically, the participants increased significantly the number of their correct answers during the Post-test. Table 1 shows the mean score and standard deviation in the students' correct answers during the pre- and post-test.

The following table (table 2) shows the number of correct answers per student, in the pre/post measurements.

Table 1. Mean score and standard deviation during pre-test and post-test

Mean	Pre-test	Post-test
	8	12,26
Std. Deviation	1,76	2,44

Table 2. Students' performance during pre-test and post-test

Students	Correct Answers Pre-test	Correct Answers Post-test	Performance Difference
Student 1	10	14	+26,7%
Student 2	5	10	+33,3%
Student 3	7	14	+46,7%
Student 4	9	13	+26,6%
Student 5	10	13	+20%
Student 6	10	14	+26,7%
Student 7	7	9	+13,4%
Student 8	9	12	+20%
Student 9	5	5	0%
Student 10	9	14	+33,3%
Student 11	11	14	+20%
Student 12	6	13	+46,6%
Student 13	9	8	-6,7%
Student 14	9	10	+6,6%
Student 15	7	14	+46,7%
Student 16	9	14	+33,3%
Student 17	10	12	+13,4%
Student 18	6	12	+40%
Student 19	6	14	+53,3%
Student 20	8	13	+33,3%
Student 21	8	14	+40%
Student 22	8	15	+46,7%
Student 23	6	11	+33,3%
Mean	8	12,26	+28,4%

As abovementioned, the second part of the pre/post-test included two open ended questions in English that the students had to answer in the target language: a) do you like art? why? b) do you like painting? What would you like to paint? This part of the test aimed at identifying the students' specific vocabulary before and after the implementation of the project.

It was revealed that there was a significant difference in the students' specific vocabulary between the two measurements. Table 3 shows the mean score of the specific vocabulary used by the students in the pre- and post-measurement.

The paired-samples t-test showed that there were no statistically significant differences in the number of specific words between the two tests with regards to the first question («*Do you like art? Why?*») ($t = 0.81$, $df = 22$, $p = 0.426 > 0.05$). Consequently, the mean score of specific words used by the students in the first question was not increased significantly.

Concerning the second question («*Do you like painting? What do you like to paint?*») the paired-samples t-test indicated that there was statistically significant difference in the number of content words used by the students between the two tests ($t = 2.92$, $df = 22$, $p = 0.008 < 0.01$), since the students increased significantly the number of content words in their answers during the post test.

The most common content words (specific vocabulary) in the students' answers were: landscapes (11 occurrences), portraits (8 occurrences), everyday life scenes (6 occurrences), still lifes (6 occurrences), self-portraits (6 occurrences), graffiti (3 occurrences), abstract art (3 occurrences) and theme (3 occurrences). At this point it must be highlighted that the aforementioned occurrences refer to the appearance of each one of the content words and not to the frequency of their appearance. Thus, though a student may have used the same word more than once, the word was still counted once.

Table 3. Mean score of content words in the pre-test and the post-test

	Pre-test		Post-test	
	Question 1	Question 2	Question 1	Question 2
Mean	1,13	1,30	1,22	2,43

Questionnaire of Satisfaction

The qualitative and quantitative analysis of the questionnaires of satisfaction data, revealed a generally positive attitude towards the CLIL project.

More precisely, most of the students ($N = 21$) stated that they liked the lessons very much, while only two of them were not much impressed by them. Concerning their favorite activities, the majority of the participants declared that they mostly liked the painting activities ($N = 21$) and the tasks/games ($N = 11$) been involved during the 'Task-cycle' and the 'follow up' phase.

The most difficult parts of the teaching sessions, according to the majority of the participants, were the acquisition of new content-specific information ($N = 5$), the painting activities ($N = 4$) and the comprehension of PowerPoint presentations ($N = 3$). With reference to the activities that the students would like to get involved more frequently during the

lessons, the majority stated that they would like to do more painting (N = 16) and play more games (N = 5).

Table 4. Typologies, categories and subcategories of Journal entries.

	Categories	Subcategories
<i>CLIL Procedure</i>	<i>Methods</i>	<i>i. multisensory learning</i>
		<i>ii. intergroup interaction</i>
		<i>iii. whole class discussion</i>
		<i>iv. brainstorming</i>
		<i>v. teaching with multimedia</i>
		<i>vi. creative activities</i>
		<i>vii. inquiry-based activities</i>
		<i>viii. games</i>
		<i>ix. dual-focused processes</i>
	<i>Successful activities</i>	<i>i. painting activities</i>
		<i>ii. games</i>
		<i>iii. PP presentations</i>
		<i>iv. presentation of paintings</i>
	<i>Less successful activities</i>	<i>i. presentation activities</i>
		<i>ii. painting activities</i>
<i>Teacher's Role</i>	<i>The teacher as facilitator and coordinator</i>	<i>i. encouragement</i>
		<i>ii. reinforcement</i>
		<i>iii. guidance</i>
<i>Students' Behavior</i>	<i>Students' attitude to tasks and activities</i>	<i>i. learning about Art as a pleasurable experience</i>
		<i>ii. interest in group interaction</i>
		<i>iii. interest in painting activities</i>
		<i>iv. interest in gaming activities</i>
		<i>v. enthusiasm and excitement</i>
		<i>vi. reduction of anxiety</i>
	<i>Students' participation in the tasks and activities</i>	<i>i. participation in gaming activities</i>
		<i>ii. participation in painting activities</i>
		<i>iii. participation in dramatization</i>
		<i>iv. participation in interactive activities</i>
		<i>v. participation in PP presentations</i>
<i>Overall reflection on the project</i>	<i>Problems encountered</i>	<i>i. students' difficulty in understanding certain concepts</i>
		<i>ii. students' difficulty in specific vocabulary</i>
		<i>iii. students' difficulty in receptive skills</i>
		<i>iv. students' difficulty in productive skills</i>
		<i>v. time management</i>
	<i>Learning Outcomes</i>	<i>i. use of target language for communicative purposes</i>
		<i>ii. acquiring content-specific vocabulary</i>
		<i>iii. cognitive and social skills development</i>
		<i>iv. developing content specific knowledge</i>
		<i>v. pleasurable learning</i>

Moreover, most of them reported that the CLIL project contributed a lot to the improvement of their language skills and specific vocabulary (N = 12) and the enrichment of their content-based knowledge (N = 22).

Finally, all students stated that they would like to participate in such a CLIL project in the next school year, because they found this experience outstanding and enjoyable (N = 15), they learned a lot of things about 'art' (N = 5) and they improved their language skills in the target language (N = 4).

Teacher's Journals

The qualitative analysis of the journal entries led to the creation of four typologies in order for similar categories and subcategories to be classified. Those typologies were: a) teaching procedure, b) teacher's role, c) student's behavior and d) overall reflection on the project (Table 4).

The analysis of the journal entries revealed a variety of teaching methods and practices used during the CLIL interventions. Multisensory learning, drawing, games, ICT, interactive and inquiry-based activities led to the creation of a supportive and entertaining learning environment, where the students felt free to express themselves and to be creative. The activities of the 'task cycle' and the 'follow up' phase proved to be more successful and effective compared to the activities in the "pre-task phase". The teacher tried to coordinate students' cooperation and interaction in every phase of the interventions, by encouraging the children to participate actively in the activities and offering them guidance whenever they needed help and support.

The students appeared to find the project enjoyable, as they felt very excited and participated actively in a game-based and creative context. The problems that they encountered concerned their receptive and productive skills, since in some occasions they found it difficult to understand and use the specific vocabulary and certain concepts. At some points, they switched to their mother tongue in order to clarify their viewpoints, but, overall, they improved their content-specific knowledge and enhanced their cognitive and language skills.

DISCUSSION AND CONCLUDING REMARKS

The paper presents the design, implementation and evaluation of a pilot CLIL project, which aimed at improving the students' productive and receptive skills in the target-language and enriching their knowledge on 'art' and 'history of art'. Every intervention was carried out in a game-based context and followed the principles of task-based learning, so that the classroom environment would promote students' communication, cooperation, interaction, conceptualization and creation. The data collected before, during and after the completion of the interventions revealed that the CLIL project had a positive impact on the target-language (EFL) and the content knowledge, History of Art which is a field that comes up only occasionally in the Greek Curriculum of Primary Education. Through their involvement in the CLIL project, the students had the chance to being familiarized with new content knowledge

in an alternative way, beyond the traditional, 'departmentalized' instruction of the school subjects (see Jäppinen 2005). Moreover, an authentic environment was created, where the students could acquire new content knowledge in an authentic context and use the target language to achieve real life communicative goals and solve 'real life' problems (Lasagabaster & Sierra, 2009).

Specifically, as far as the target language is concerned, the data indicated significant improvement in relation to the children's receptive and productive skills. As the project moved on, the participants were enhancing their communicative skills and were enriching the general and specific vocabulary, as well as they were more flexible in transferring the new content knowledge to other situations. These results coincide with the findings of previous studies, in which CLIL learners performed at above-normal levels in both receptive and productive skills in the target language (Dalton-Puffer, 2008; Korosidou & Griva, 2013; Papadopoulos & Griva, 2014; Sánchez Pérez & Salaberri Ramiro, 2013).

Concerning the content-knowledge, it was revealed that the students seemed to have improved significantly their knowledge in relation to identifying aspects of 'art' and 'history of art' and distinguishing certain features of various artistic movements, artists and paintings, and thus they enhanced their appreciation of art. The findings are in line with previous extensive research findings on CLIL approach (Gimeno et al., 2010; Griva & Kasvikis, 2015; Kiraz et al., 2010; Mattheoudakis, Alexiou & Laskaridou, 2014; Papadopoulos & Griva, 2014; Popescu, 2008).

Moreover, the children seemed to consider CLIL approach as an extremely pleasant process, and they stated that they would like take part in such a project during the following school year. Their active participation and interaction, as well as their enthusiasm and their effort to achieve a better performance both in language and content were recorded in the journal entries. Moreover, it was revealed that the students expressed particular pleasure and enjoyment about the most creative part of every teaching session, such as the painting activities, and the collaborative games.

In conclusion, besides the limited number of sessions and the small sample size, the experimental CLIL project was successful in enhancing both primary school students' FL skills and content knowledge. As a result, the specific project could be implemented in several primary school classrooms throughout a longer period of time in order to depict a broader and more complete picture of its effectiveness in the future.

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Chapter 49

NEW DEVELOPMENTS IN LEXICAL INFERENCING AND INCIDENTAL VOCABULARY ACQUISITION IN FOREIGN LANGUAGE LEARNING

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ABSTRACT

Lexical inferencing strategies are important cognitive strategy not only for obtaining good level of reading comprehension but also an effective learning strategy in vocabulary acquisition (Barnett, 1990; Schmitt, 1997). Closely related to lexical inferencing strategies is incidental vocabulary acquisition, the latter is seen as an essential prerequisite for the latter, and the latter is viewed as one of the products of lexical inferencing strategies. This chapter systematically and critically reviews a variety of factors which influence lexical inferencing strategy use and incidental vocabulary acquisition among foreign language (FL) learners. The chapter concludes with some directions for researchers to consider in the future research.

INTRODUCTION

Lexical inferencing, as a paramount cognitive strategy (O'Malley & Chamot, 1990; Oxford, 1990), is one of the most effective learning strategies not only in reading comprehension but also in vocabulary acquisition (Barnett, 1990; Schmitt, 1997). Another concept which is closely related to lexical inferencing is incidental vocabulary acquisition, which is always viewed as one of the products of using lexical inferencing strategies in reading (Fujiwara, 2004). This chapter first offers a comprehensive definition of lexical

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inferencing, it then systematically review lexical inferencing studies in foreign language reading. Then the definition of incidental vocabulary acquisition and studies on incidental vocabulary acquisition through reading are critical reviewed. In the end, it points out directions for future research in lexical inferencing and incidental vocabulary acquisition research.

DEFINITION OF LEXICAL INFERENCING

Lexical inferencing is a type strategy, which makes informed guesses as to the meaning of unknown words using different kinds of resources (Bengeleil & Paribakht, 2004; de Bot, Paribakht, & Wesche, 1997; Fraser, 1999; Haastrup, 1991; Kuhn & Stahl, 1998; Nassaji, 2003; Oxford & Scarcella, 1994; Paribakht & Wesche, 1999). According to Haastrup (1991), the available resources involve: “all available linguistic cues and in combinations with general knowledge of the world, awareness of the context and relevant linguistic knowledge” (p. 40). Deschambault (2012) describes lexical inferencing as “among the most common techniques that L2 learners use to generate meaning for unknown words they encounter in context” (p. 266). Past research has indeed confirmed that FL learners infer the meanings of unknown words more often than looking them up in a dictionary (Hulstijn, Hollander, & Greidanus, 1996; Schmitt, 1997). The correctly guessed words can be integrated into learners’ existing vocabulary knowledge, and hence result in acquiring new vocabulary incidentally through reading, which is termed as incidental vocabulary acquisition (Hamada, 2005; Pulido, 2004, 2009).

In order to infer the meaning of words, a reader needs to notice that the written form of a particular word is unknown and to be alerted that a gap of the word exists in his/her mental lexicon. This initial gap noticing is known as “lexical bootstrapping”, which occurs concurrently with other reading processes in a reader’s working memory (Clark, 1993; de Bot et al., 1997; Nassaji, 2003; Pulido, 2009; Sternberg, 1987). The reader may attempt to derive the meaning of the word by analysing the word’s internal structure; by using contextual cues; by inferring using some extralinguistic knowledge, such as world knowledge, or by orchestrating some or all of these sources. During this process, the activated multiple cues are held in working memory in order to generate an appropriate meaning of the unknown word. Lexical inferencing is considered to be a crucial step necessitating successful incidental vocabulary acquisition to occur (de Bot et al., 1997; Fraser, 1999; Huckin & Coady, 1999; Paribakht, 2005; Paribakht & Wesche, 1999). As lexical inferencing is considered not only as an important reading strategy; but also a prerequisite for incidental vocabulary acquisition through reading, thus lexical inferencing research has been carried out in both reading and vocabulary acquisition domains.

In FL lexical inferencing research, existing studies have probed into a variety of factors, including characteristics of learners and reading texts, as well as characteristics of the target words on learners’ behaviours in lexical inferencing. In terms of learner characteristics, previous studies have demonstrated that attention to detail in context affects their ability to use context effectively in guessing lexical inferencing (Frantzen, 2003).

EMPIRICAL STUDIES ON LEXICAL INFERENCING IN READING

In the literature of FL reading, it is common practice to research lexical inferencing by instructing readers to apply lexical inferencing to guess meaning highlighted target words without necessarily reporting other reading strategies (Deschambault, 2012; Nagy, Anderson, & Herman, 1987); and most lexical inferencing studies are related more closely to vocabulary acquisition rather than reading.

Most previous studies on lexical inferencing have either deliberately directed learners' attention to figuring out the meaning of highlighted new words in reading, or have modified contexts in which new words appear with explicit definitions or ample exemplars in order to make them more informative than normal reading texts (Nagy et al., 1987; Gipe, 1979). For instance, some researchers have purposefully constructed a fabricated text by placing a pseudoword in between every 50 words across the text (e.g., Ames, 1966). By doing such things, either unnatural reading situations are created or reading texts are distorted. Because readers are forced to infer every target word, such practices are not able to reflect a natural situation in which a reader comes across a new word in reading. Nagy et al. (1987) critiqued these research designs, suggesting that what a reader can do "under this special arrangement tells us very little about how likely a person is to figure out and remember the meanings of unfamiliar words during normal reading" (p. 238).

Studies of lexical inferencing in L1 reading with native English speaking children have been extensive. These studies have revealed that children are capable of deriving meaning of unknown words from context (e.g., Cain, Oakhill, & Elbro, 2003; Nagy, Herman, & Anderson, 1985). These studies have shown that children's characteristics, such as their age (e.g., van Daalen-Kapteijns, & Elshout-Mohr, 1981), intelligence (e.g., Sternberg & Powell, 1983), reading proficiency (Cain, et al., 2003), existing vocabulary knowledge (e.g., Sternberg & Powell, 1983), ability to analyse word structure (Shu & Anderson, 1997), and working memory (e.g., Daneman & Green, 1986), all have an impact on children's lexical inferencing ability. For instance, Cain et al. (2003) manipulated the distance between target words and the contextual information for deriving definition of the target words in short stories to see whether levels of reading proficiency could impact the ability to obtain the meaning of the target words. The results demonstrated that less skilled readers performed worse on meaning generation of the target words, especially in situations in which the distance between the novel words and the contextual information was further away.

In addition to children's characteristics, L1 lexical inferencing studies have also examined the influence of properties of target words and contexts where the target words are surrounded on children's lexical inferencing success. These studies have found that low frequency words (e.g., Graham & Watts, 1990), words with low imaginability and concreteness (e.g., Fukink, Blok, & de Glopper, 2001; McFalls, Schwanenflugel, & Stahl, 1996; Sternberg & Powell, 1983), words which entail difficult concepts and words which have non-transparent morphological cues (e.g., Shu & Anderson, 1997), tend to hamper children's success in deriving the meaning.

In FL lexical inferencing research, existing studies have probed into a variety of factors, including characteristics of learners and reading texts, as well as characteristics of the target words on learners' behaviours in lexical inferencing. In terms of learner characteristics, previous studies have demonstrated that attention to detail in context affects their ability to

use context effectively in guessing lexical inferencing (Frantzen, 2003). In a study with native English speaking teenagers acquiring Spanish, Frantzen (2003) reported that her readers often showed ignorance of details in the context, which had the potential to reveal the correct meaning of the new words. The learners' inattentiveness often prevented them checking their initial inferences, even though the context did not support these guesses. She found that "inattention occurs not only when reading difficult passages, where it is more understandable, but also in easier contexts" (p. 184). Therefore, she suggested from a pedagogical view, learners needed to be instructed on re-evaluation strategies of the initial guess against contextual information.

Learners' language proficiency is another factor that influences lexical inferencing behaviours. With two groups of Danish EFL teenagers differing in English proficiency, Haastrup (1991) found that the higher proficiency group used more intralingual cues (i.e., linguistic cues of the target words and syntactic structure of sentences) than the lower proficiency group, which led the author to claim that there seems to be a threshold of language proficiency for certain lexical inferencing strategies to be applied. In another study, Chern (1993) found that among Chinese EFL learners, the less proficient learners relied more on local cues than their higher proficient counterparts to guess unknown words in reading English expositions. Even though these studies have shown distinct lexical inferencing behaviours in terms of using sources to generate inferences according to proficiency level, language proficiency may not affect success in lexical inferencing. For instance, Bensoussan and Laufer (1984) compared the success of lexical inferencing among good, average, and weak EFL learners at the beginning level. The learners were given an expository text to read and asked to use lexical inferencing strategies, however, no significant relationship was found between proficiency and number of corrected guessed words.

Apart from the influence of general language proficiency, there is a suggestion that FL reading proficiency also affects lexical inferencing behaviours, including frequency of attempts to infer words and ease of integrating information from multiple sources in lexical inferencing. Previous studies have reported that more skilled readers tend to make more attempts to infer than less skilled ones (e.g., Fraser, 1999); on the other hand, less proficient readers encountered more difficulties in combining different sources in lexical inferencing (e.g., Schouten-van Parreren, 1989).

Learners' existing vocabulary knowledge is also a crucial element for successful lexical inferencing to occur. When words surrounding the target words are unknown, it considerably limits chances for learners to disambiguate the target words (Huckin & Coady, 1999). Levels of vocabulary knowledge do not only lead to differences in lexical inferencing strategy use, but also generate different rates of successful inference. Among 21 ESL learners from a variety of language backgrounds, Nassaji (2003) found those who performed well in the Word-Associate Test (Read, 1993) in terms of depth of vocabulary knowledge used certain lexical inferencing strategies more frequently and effectively. A multiple regression analysis revealed that depth of vocabulary knowledge was an additional predictor of lexical inferencing success over frequency of lexical inferencing strategy use.

With regard to characteristics of reading texts, the difficulty level of texts has been shown to influence inferencing behaviours and subsequent success of lexical inferencing. Frantzen (2003) maintained that a difficult text may demotivate learners from processing contextual clues; and when the difficulty level is beyond learners' ability, it often deprives the availability of contextual cues to be used in lexical inferencing. One of the indicators of text

difficulty has been measured by using new word density in a text. To investigate the impact of the density of unknown words on lexical inferencing success, Na and Nation (1985) varied the density of new words in two expositions which embedded a number of pseudowords as target words. Each exposition had two versions, namely a high-density (1 in 10) and a low-density (1 in 25). The participants were allocated the high-density texts first and were required to provide their inferences followed by reading and making inferences for the low-density texts. The study did not find a conclusive result as to whether the density of new words affected lexical inferencing. The results showed that for one exposition, the low-density version facilitated lexical inferencing, but the positive results were not replicated in another low-density exposition. Despite the inconsistent results, the study also suffered from methodological design. The facilitative effect of the low-density version could be partially attributable to the order of reading: since the low-density versions followed the initial reading of the high-density versions, from which it was highly possible to generate a reasonable level of understanding of the text. The initial comprehension could have been helpful in subsequent lexical inferencing in reading low-density expositions.

Levels of contextual cues for lexical inferencing have also been examined and studies have collectively revealed that rich contextual cues tend to generate superior inference and better retention of inference (e.g., Li, 1988; Mondria & Wit-de Boer, 1991). Li (1988) investigated lexical inferencing and retention of new words in sentences by varying contextual cues. The results showed that learners reported that contextually rich sentences made lexical inferencing easier. He also found that contextual richness tended to lead to more accurate inference, and hence resulted in better retention after inferencing compared to contextually poor sentences. The correlation between the success of word inference and subsequent learning measures was as high as .90. Likewise, Mondria and Wit-de Boer (1991) also found words in rich contextual information were comparatively easier to infer, and were more likely to be inferred correctly. Contrary to Li's (1988) results, however, they reported that rich information did not yield better acquisition after inferencing, and they explained that easily guessed words required less effort and were processed only superficially, which might "hamper imprinting" of the words (p. 262).

With regard to characteristics of target words, less research has been focused on this area. One example is the study by Paribakht (2005). Paribakht (2005) was interested in whether different lexicalization of the concepts (i.e., whether a target word in FL has an equivalent concept in L1) between L1 and FL of the target words could affect types of lexical inferencing, knowledge sources of lexical inferencing, and rate of success. With 20 Farsi speaking EFL learners, he found that even though the pattern of lexicalization did not influence types of strategies and knowledge sources, lexicalised target words which meant the words' concepts could be found in L1, significantly generated more successful inference than non-lexicalised target words (Paribakht, 2005).

DEFINITION OF INCIDENTAL VOCABULARY ACQUISITION THROUGH READING

Incidental vocabulary acquisition through reading is one of the products of using lexical inferencing strategies in reading (Fujiwara, 2004). The notion of incidental vocabulary

acquisition comes from research on native English speaking children's vocabulary development. Research has shown that on average children can learn around 3,000 to 5,000 words annually through grade 3 to grade 12 (Anderson & Freebody, 1981; Nagy & Anderson, 1984; Nagy et al., 1987; White, Power, & White, 1989). Among these words, less than 10.00% (around 200 to 300 words) are learned through direct instruction (Durkin, 1979). Considering that only limited class time is available for teaching vocabulary, children must have acquired a significant proportion of new vocabulary incidentally through activities like reading and listening (Nagy & Anderson, 1984). This kind of vocabulary acquisition is called "incidental", as word acquisition is a non-target activity but rather a by-product resulting from other activities (Coady, 1997; Fujiwara, 2004; Hamada, 2005). The predominant activity through which incidental vocabulary acquisition occurs is reading, as visual information lends itself better to word acquisition compared to audio information (Huckin & Coady, 1999).

A common practice for researching incidental vocabulary acquisition through reading is to ask learners to read a text containing a number of unknown words, and after reading learners are tested on the spelling and attributes (e.g., meaning, part of speech, and usage) of these words without knowing beforehand they will be tested (Fukkink et al., 2001; Nagy et al., 1987; Swanborn & de Gloppe, 1999).

EMPIRICAL STUDIES ON INCIDENTAL VOCABULARY ACQUISITION THROUGH READING

Researchers have regarded incidental vocabulary acquisition as an important source for children to expand their vocabulary (Fukkink et al., 2001; Nagy & Anderson, 1984; Nagy et al., 1987). Nagy and Herman (1987), for example, argued that native English speaking children learn the vast majority of words through deriving meaning of unknown words in their extensive reading. Nagy et al. (1985) also maintained that "incidental learning from context during free reading is the major mode of vocabulary acquisition during the school years" (p. 234). They further examined the rate of incidental vocabulary acquisition through reading by children, and found that the probability of acquiring a word incidentally through reading is around between 15% and 22% (Nagy et al., 1985). This percentage increases if the words are repeatedly exposed to children (Stahl & Nagy, 2006).

Incidental vocabulary acquisition needs to be distinguished from lexical inferencing, though the latter is a central cognitive process in the former (Fujiwara, 2004). Lexical inferencing is only a necessary but not sufficient skill in successful incidental vocabulary acquisition through reading (Pulido, 2003, 2004, 2007, 2009), which comprises both lexical inferencing ability and subsequent memorization of the form of the inferred word and of the mapping between the form and the inferred meaning (Fukkink et al., 2001).

L1 incidental vocabulary acquisition studies have examined the impact of various characteristics of children on their success of acquiring new words incidentally from reading. These studies have generally agreed that students' incidental vocabulary acquisition seems not to be influenced by their grade level (e.g., Nagy et al., 1987; Shu, Anderson, & Zhang, 1995). However, inconsistent results have been observed as to the effect of children's ability (e.g., Nagy et al., 1987; Shu et al., 1995; Sternberg & Powell, 1983), their existing vocabulary knowledge (e.g., Daneman & Green, 1986; Nagy et al., 1987), and their reading proficiency

(e.g., Herman, Anderson, Pearson, & Nagy, 1987; Nagy et al., 1985, 1987) on incidental vocabulary acquisition.

Besides learners' characteristics, researchers have also postulated that characteristics of target words, such as familiarity of concepts and degrees of morphological transparency of target words, would play a role in children's incidental vocabulary acquisition through reading (White et al., 1989). From empirical studies, a conclusion has been made that it is very hard for children to incidentally acquire a new word whose concept is unfamiliar to them just by a single encounter during reading (Shu et al., 1995). However, inconsistent results have been observed with regard to whether morphological transparency of target words affects success of incidental vocabulary acquisition through reading (e.g., Nagy et al., 1987; Shu et al., 1995).

Similar to what has been done in L1 incidental vocabulary acquisition, researchers have explored the influence of roles of readers, and characteristics of reading texts and target words on incidental vocabulary acquisition success in FL reading. Existing research has shown that reader factors, including readers' reading proficiency, vocabulary knowledge, and background knowledge of reading topics, all affect incidental vocabulary acquisition (e.g., Bengelil & Paribakht, 2004; Haastrup, 1991; Itzész, 1991; Morrison, 1996). In a series of studies with English speakers learning Spanish as a FL, Pulido (2003, 2004, 2007) consistently observed that regardless of the familiarity of the topics they read, FL reading proficiency as measured by a standardized Spanish reading test showed a significant and positive effect on both incidental vocabulary acquisition and retention. The magnitude of the correlations between text reading comprehension appeared to be slightly larger than those between reading proficiency acquisition and retention. With a different population, Rott (1997) found that correlations between text comprehension and incidental vocabulary acquisition and retention were moderate to strong among English speakers learning German as a FL. Not only FL reading proficiency, but L1 reading proficiency too, is able to predict incidental vocabulary acquisition. A study with Taiwanese EFL learners showed that L1 reading proficiency could explain around 8% of variance in incidental vocabulary acquisition (Haynes & Carr, 1990).

Learners' levels of existing vocabulary knowledge have been found to affect incidental vocabulary acquisition through reading. Both general vocabulary knowledge and knowledge of specific words in reading texts in which target words are embedded (known as passage sight vocabulary knowledge) are related to incidental vocabulary acquisition (e.g., Haynes, 1989; Haynes & Baker, 1993; Horst, Cobb, & Meara, 1998; Pulido, 2003, 2004, 2007, 2009). In two related studies, Haynes (1989) and Haynes and Baker (1993) tested the role of general FL vocabulary knowledge on learners' incidental vocabulary acquisition through reading an exposition among advanced Chinese EFL learners. Vocabulary knowledge was measured by a sentence completion task, and incidental acquisition was tested using a supply-definition test. A moderate positive correlation between the two was produced ($r = .62$). However, the sentence completion test was not a standardized test and this may have affected the reliability of testing vocabulary knowledge. Using a more reliable task to measure learners' vocabulary size by the Vocabulary Levels Test (Nation, 1990), Horst et al. (1998) also found moderate correlation between vocabulary knowledge at 2000 frequency level and incidental acquisition of new words through reading a simplified novel. Besides general vocabulary knowledge, Pulido (2003, 2004, 2007, 2009) consistently found that passage sight vocabulary knowledge

is a significant predictor of incidental vocabulary acquisition and retention after 4 weeks' initial acquisition.

Readers' topic knowledge of a reading text was also examined by Pulido (2003, 2004, 2007) in the above studies. The results demonstrated that even though familiarity of topics did not affect incidental vocabulary acquisition measured by a meaning production task, the familiar texts resulted in acquiring more target words measured by a meaning recognition task. These results were understandable, as meaning production for measuring incidental vocabulary acquisition was too demanding and a floor level was observed in the participants' performance (Pulido, 2003, 2004, 2007). These studies also provide a methodological basis for using a recognition task to measure incidental vocabulary acquisition.

In terms of the textual factor, studies have found that textual modification affects incidental vocabulary acquisition. In a few studies, reading texts were either simplified or elaborated, and incidental vocabulary acquisition was compared among baseline, simplified, and elaborated texts. The results consistently indicated that both simplified and elaborated texts were more prone to vocabulary gains in incidental acquisition than baseline texts (e.g., Silva, 2000).

Characteristics of target words have also been found to relate to incidental vocabulary acquisition, including types of words (e.g., Vidal, 2010), structure of words (e.g., Vidal, 2010), and lexicalization of words (e.g., Chen & Truscott, 2010). Vidal (2010) examined incidental vocabulary acquisition and retention of different types of words, namely technical, academic, and low frequency words, through reading academic texts; and he also examined the impact of different word structures: cognates, morphologically predictable words, and false cognates, on acquisition and retention of new words incidentally. Vidal (2010) found types of words could explain about 20% of variance of incidental acquisition, with the best gain by technical words followed by low frequency and academic words, which had the least gain. The researcher suggested superior acquisition of technical words was due to their relevance to understanding the gist of the academic texts. Although contrary to expectation, academic words produced the worst results, the researcher pointed out that the academic words were not salient enough for learners to pay attention to. The word structure variable made an even higher contribution of almost 40% of the variance for incidental acquisition. Among words with different structures, the learners had a similar level gain for cognates and morphologically predictable words, but learned significant false cognates.

The effects of lexicalization of target words on incidental vocabulary acquisition were examined by Chen and Truscott (2010). With 72 Taiwanese EFL learners, Chen and Truscott (2010) examined a number of repetitions of exposure and lexicalization patterns of target words on incidental vocabulary acquisition. They found that non-lexicalized words, referred to as words without equivalent concepts in L1, were learnt much worse compared to lexicalized items. Even when non-lexicalized words were repeatedly exposed to the learners as high as 7 times during reading, these words were still not successfully acquired. Such finding seems to be in line with L1 studies, which have found difficulties for children acquiring a new word incidentally when its concept is unknown to them (Nagy et al., 1987; Shu et al., 1995).

FUTURE DIRECTIONS OF LEXICAL INFERENCING AND INCIDENTAL VOCABULARY ACQUISITION THROUGH READING IN FOREIGN LANGUAGE LEARNING

The review of existing lexical inferencing studies and incidental vocabulary acquisition studies provides three avenues which warrant further exploration. Firstly, lexical inferencing should be researched in a more natural reading situation in which the target words should not be highlighted and learners should not be informed that they must apply lexical inferencing to guess the meaning of these words. A better methodology to obtain lexical inferencing information than previous studies is to examine readers' lexical inferencing without marking target words, and without telling them that they have to infer the target words. Rather, it is up to readers to make decisions as to whether it is necessary to make an informed guess of what they think needs to be inferred.

Secondly, as lexical inferencing is considered to be a common reading strategy, which belongs to higher-level processes in reading; it is likely that lexical inferencing strategies may be affected by learners' lower-level processing efficiency, such as word recognition efficiency, and sub-lexical processing (e.g., phonological and orthographical processing). Similarly, word recognition efficiency, and sub-lexical processing (e.g., phonological and orthographical processing) may also affect intentional vocabulary acquisition through reading, this is because a learner's ability to extract phonological information from print is "a vital component in learning and remembering new words" (Hamada & Koda, 2008, p. 515). Quick and efficacious capacity for converting graphic symbols into corresponding sounds may facilitate the newly obtained information (e.g., sounds and/or spelling of a new word) being integrated into working memory (Hamada & Koda, 2008). Fast and effort-free word recognition of existing words may enable readers' working memory to be freed up so that it can be used in processes of successful incidental vocabulary learning, including noticing, inferring, and integrating of the to be learnt words into one's existing mental lexicon (Hamada & Koda, 2010; Pulido, 2004, 2009). In a recent study, Han (2014) reported that lexical access inefficiency could inhibit incidental vocabulary acquisition among Chinese learners of English. However, Hamada and Koda (2010) did not find word decoding efficiency influenced incidental vocabulary acquisition during reading. As little research has been done in this area, more studies with a variety of learners backgrounds are needed to examine the relationship between word recognition and vocabulary acquisition in the future.

Thirdly, past research has investigated a variety of learners' characteristics in relation to lexical inferencing and incidental vocabulary acquisition, such as language proficiency, reading proficiency, and vocabulary knowledge. Considering both reading and incidental vocabulary acquisition place requirements on readers' cognitive capacity, it is possible that different levels of different capacities of working memory affect use of lexical inferencing strategies and incidental vocabulary acquisition through reading for FL readers. In the future researchers may consider investigating the relationship between learners' working memory capacity, and use of lexical inferencing strategies and incidental vocabulary acquisition through reading.

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Chapter 50

NEW LITERACIES: CURRENT PERSPECTIVES ON TEACHING ENGLISH AS A FOREIGN LANGUAGE

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ABSTRACT

The New Literacy Studies encompass a notion of language as a social practice and the understanding that it is necessary to foster the development of critical thinking in citizens/students, aiming at citizenship education and social change. This chapter aims to introduce the theories of New Literacies and Critical Literacy and their relevance to research in the field of Teaching English as a Foreign Language (TEFL) and Teacher Education. The chapter presents and discusses a group of recent theories that serve as the theoretical basis for a possible epistemological change in Teaching English as a Foreign Language, especially in public schools. The chapter starts by presenting Literacy Studies and how the concept of Literacy has changed lately and goes on to discuss the New Literacies Studies (Baynham; Prinsloo, 2009; Larson; Marsh, 2005; Street, 1984) and Multiliteracies (Cope; Kalantzis, 2000). The well-known autonomous and ideological models of literacy (Street, 1984) are also presented and discussed in the chapter. Throughout the chapter, some examples to the fields of English as a Foreign Language (EFL) and Language Teacher Education are also presented and implications to research and practice in these areas are discussed. The chapter takes the perspective of EFL teaching in Brazil, where the research was conducted.

Keywords: new literacies, teaching English as a Foreign Language, teacher education

INTRODUCTION

The field of teaching English as a Foreign Language (EFL) in Brazil is currently undergoing major changes, especially due to the imperative of the new technologies, the

processes of globalization, and the influence of recent official documents, such as the Curriculum Guidelines for High School Teaching – Foreign Languages (Brazil, 2006). Our current Western society is becoming highly literate and technologized (Lankshear & Knobel, 2003), as technology turns to be almost ubiquitous in our lives, as well as in Education (Kalantzis & Cope, 2010). At the same time, the processes of globalization have brought exponential change to society in general, also influencing Education and, therefore, the Teaching of English as a Foreign Language (TEFL) and Language Teacher Education (LTE), specifically. In this context, theories about new literacies have come to play an important role as a new trend for teaching EFL in regular schools in Brazil, following suggestions from the Curriculum Guidelines for High School Teaching (Brazil, 2006). The theories of New Literacies encompass a notion of language as a social practice and an understanding that it is necessary to foster the development of critical thinking in citizens/students, allowing them to question, analyze and challenge the existing power relations, in order to bring about social change. This chapter is aimed at introducing the theories of New Literacies and its relevance to research in the fields of TEFL and LTE. To this purpose, the chapter presents and discusses a set of recent theories that serve as the theoretical basis for a possible epistemological change in teaching foreign languages, especially in public school settings. Understanding them more deeply and clarifying their concepts and characteristics may help teachers in pre-service or in-service education, and even teacher educators, who find themselves bombarded by numerous methodological proposals (Jordão, Mattos & Gattolin, 2011) and different federal, state and municipal public policies (Duboc, 2011; Maciel, 2011), which often flood the school system and daunt practitioners and students alike.

THE NOTION OF LITERACY AND ITS DEVELOPMENTS

Soares (1998) establishes an important distinction between the concepts of alphabetization and literacy. For the author, “alphabetization means to teach [someone] to read (and write)” (p. 16), whereas literacy is “the result of the action of teaching or learning to read and write: the state or condition that a social group or an individual acquires as a result of having appropriated the writing system” (p. 18). Therefore, literacy processes go beyond the traditional concept of alphabetization understood narrowly as the ability to decode the writing system. Rojo (2002) states that “reading involves various procedures and capacities (perceptual, praxic, cognitive, affective, social, discursive, linguistic), all dependent on the situation and reading purposes” (p. 32), which are usually defined by localized practices and (re)produced socio-historically. The concept of literacy, thus, is now expanded and has come to encompass social practices of reading and writing (Mattos, 2011).

Several authors nowadays discuss the concept of literacy from different points of view and offer varied definitions. Street (1984), for example, uses the term “‘literacy’ as a shorthand for the social practices and conceptions of reading and writing” (p. 1). Lemke (1998) generally defines literacy “as a set of cultural competences for making socially recognizable meanings by the use of particular material technologies” (p. 1). Norton (2007), in turn, states that the “dominant conception of literacy among governments, policy-makers, and many members of the general public is that literacy references the ability, on the part of individuals, to read and write” (p. 6). The author does not advocate this view, but claims that

it is still useful and important. Lankshear, Snyder and Green (2000) adopt Street's definition cited above, but note that literacy cannot be taken as fixed because it is always evolving. Mark (2009) states that "there is no single universally effective or culturally appropriate way of [...] defining literacy" (p. 108). On the contrary, for the author, any definition of literacy should "be seen as a function of the social, cultural, and economic conditions" (p. 108) of the medium in which it was produced. His definition of literacy, or "literacy practices," is very broad and may include "routines, skills, and understandings that are organized within specific contexts, and also the feelings and values that people have about these activities" (p. 120). Thus, we see that literacy has a strictly local nature and, therefore, cannot be conceived in a universalizing way, that is, through global and generalizing definitions.

Castell, Luke and MacLennan (1986) argue that "the technocratic approach to education has come to dominate current educational practice and research" (p. 6), leading to the dissemination and use of assessment practices of school literacy through standardized instruments. This is, according to the authors, one of the problems that justify the perceived "literacy crisis" due to the "discrepancy between what counts as literacy in the school, and the actual kinds of literate competence useful in community and occupational activities" (p. 7). It is precisely this conception of literacy as something that meets the needs and demands of the "work and citizenship in modern society" that Castell, Luke and MacLennan call "functional literacy," that is, an attempt "directed toward articulating a concept of literacy that is relevant to the more practical aspects of everyday life for society as a whole" (p. 7) and not only for that portion of society seen as the dominant "literate class."

The authors state that the term "functional literacy" has been widely used in various contexts and cite the definition of the 1971 UNESCO Committee for the Standardization of Educational Statistics, which says that "a person is literate when he has acquired the essential knowledge and skills which enable him to engage in all those activities in which literacy is required for effectively functioning in his group or community" (p. 8). For the authors, however, such definitions are not enough, since they don't consider individual differences in relation to the literacy contexts of use.

For this reason, Castell, Luke and MacLennan highlight some issues to consider for a better theoretical understanding of literacy and for the development of teaching strategies and practices. In the authors' view, it would be necessary to take into account "the underlying principles that enable an individual to select, modify, and apply an existing reading competence to a new reading task" (p. 9). According to them, it would be necessary to "enable individuals to apply the information-processing strategies used in reading to other information coding and decoding processes, such as writing, speaking, and nonverbal communication" (p. 9). Another issue to consider would be "the significance of the social and pragmatic contexts within which linguistic interaction occurs," since "the contextual nature of linguistic interaction influences both the acquisition and use of literacy" (p. 9).

Citing Bourdieu (1977), Castell, Luke and MacLennan (1986) use the concept of "expanded competence," defined as "the ability to exercise competence consistently with the variables of social context" (p. 10). For Bourdieu (1977, p. 646), according Castell, Luke and MacLennan, the problem "is not the possibility of producing an infinite number of grammatically coherent sentences, but the possibility of using an infinite number of sentences in an infinite number of situations, coherently and pertinently." It is this notion of expanded competence that Castell, Luke and MacLennan (1986) suggest that should be considered in research on literacy in industrialized societies of the world nowadays.

The conclusion they reach is now widely accepted in the study of literacy. They argue that “literacy is necessarily ‘situational’ [and] operational definitions of functional literacy and criteria for its assessment are always culturally and historically specific” (p. 11). In addition, the authors state that any definition of functional literacy should cover “not merely knowledge of rules and the ability to follow rules, but also the capacity to think, reason, and judge *beyond* existing social rules” (p. 11).⁵⁷

For Gee (2008), any current conception of literacy is “inherently political, in the sense of involving relations of power among people” (p. 31). It is within this conception that literacy should be seen as a social practice. As stated by Soares (1998), by prioritizing the social dimension of the literacy phenomenon, it comes to be defined as what “people *do* with the skills of reading and writing in a specific context, and how these skills relate to needs, values and social practices” (p. 72).⁵⁸ In this sense, literacy is no longer defined in terms of individual skills and becomes, for the author, “a set of social practices related to reading and writing in which individuals engage in their social context” (p. 72).

The author reports that this social dimension of literacy can be interpreted in two conflicting ways. According to her, there is a “weak” version and a “strong” version of the characteristics and implications of the social dimension of literacy. In the “weak” version, the definition of literacy corresponds exactly to what Castell, Luke and MacLennan (1986) have defined as functional literacy, as discussed above. Soares (1998) adds that this view of literacy as a functional skill, that is, that which allows “individuals to *function* properly in a social context” (p. 72),⁵⁹ is a progressive and liberal interpretation of the term, bearing in its wake

the belief that highly positive consequences come, necessarily, from [literacy]: since reading and writing skills are used to the adequate functioning and participation in society, and for personal success, literacy is considered to be responsible for producing important results: cognitive and economic development, social mobility, professional progress, citizenship (SOARES, 1998, p. 74).

As pointed out by Gee (2008), the “literacy myth,” or the belief that having literacy skills produces many positive consequences for the individual, today is discredited because “literacy in and of itself, abstracted from historical conditions and social practices, has no effects, or, at least, no predictable effects” (p. 45). According to him, what produces these consequences “are historically and culturally situated social practices of which reading and writing are only bits, bits that are differently composed and situated in different social practices” (p. 45).

This view, according to Soares (1998), reflects the “strong” version of the literacy concept in which literacy “cannot be considered a neutral ‘tool’ to be used in social practices whenever required” (p. 74). Much more than that, literacy, in this concept, is defined as

a set of socially constructed practices involving reading and writing, generated by wider social processes, and responsible for strengthening or questioning values, traditions and forms of power distribution present in social contexts (p. 74-75).

⁵⁷ Italics in the original.

⁵⁸ Italics in the original.

⁵⁹ Italics in the original.

The so-called “strong” version of the literacy conception gave rise to some of the most fruitful studies on literacy, in the way it is interpreted and understood in current research. This new way of understanding and interpreting literacy became known as “new literacies” and later, “multiliteracies,” as discussed below.

NEW LITERACIES AND MULTILITERACIES

Larson and Marsh (2005) explain that, from the late 70s and early 80s on, literacy researchers began to describe the practices of reading and writing as intrinsically linked to social practices in use in specific social groups, challenging the traditional way to approach reading and writing. Important names among these researchers are Shirley Brice Heath (1983) and Brian Street (1984), and the seminal work of Scribner and Cole (1981), ushering in what is now known as Studies of New Literacies or New Literacy Studies (Baynham & Prinsloo, 2009; Larson & Marsh, 2005). Gee (2008) and Baynham and Prinsloo (2009) argue that these studies began to emerge in the early 1990s from research in different fields of knowledge.

Thus, studies of new literacies emerged in opposition to the traditional view, then dominant, that literacy is a set of cognitive or psychological skills that people have, and that can be taught in a neutral way in formal or informal teaching contexts. For Larson and Marsh (2005), studies of new literacies see literacy as a complex social practice and critique, built upon daily social interactions in specific contexts.

Traditionally, literacy was treated as an individual skill and school development was evaluated through a carefully planned linear path. Larson and Marsh (2005) argue that traditional approaches to education believe that literacy is a set of skills that can be taught in isolation and that the individual practice and repetition of these skills are sufficient for learning them. In addition, traditional literacy practice in schools follows a linear model which, according to the authors, introduces specific concepts depending on specific stages of learners’ cognitive development, mainly based on their age, since it “assumes that children progress in similar ways and acquire specific skills in sequence” (p. 4-5). However, Larson and Marsh say that, in this traditional approach, children who are unable to acquire such skills at the same rate as their peers are seen as “inadequate,” thus leading to the creation of a “deficit model” (p. 5).

Larson and Marsh add that traditional models of literacy are associated with children following a so-called “normal” development path, that is, “a child who, it is assumed, lives in a family which should support the child’s development through the provision of particular resources and literacy practices” (p. 5). According to the authors, this is how social norms and practices of white, middle class families are now recognized as literacy experiences desirable for all children.

As Gee (2008) has noted, throughout our history, the use of language has constituted a point of identification among human beings, that is, language is “what makes us human and what distinguishes us from other creatures on earth” (p. 50). However, literacy has become a point of differentiation among human beings themselves, separating the literate from the non-literate, and assigning specific – and culturally more valued – features to the literate ones, such as intelligence, modernity and morality, and linking literate individuals and cultures to the notion of civilization. Even among literate individuals and cultures, literacy can be taken

as a point of differentiation among individuals if considered from traditional views, that is, when it is seen as a single cognitive ability that can be learned in an isolated and neutral way. That is why, according to Larson and Marsh (2005), literacy can be used to distinguish learning among school children, leading to discrimination, that is, the belief in the capacity of some of these children as opposed to the incapacity of others.

New literacies researchers are, therefore, contrary to these traditional practices and advocate literacy models that transfer the focus from understanding literacy as an individual cognitive ability to situated social practices. For these scholars, literacy is socially constructed and teaching approaches of literacy understand and emphasize the social nature of learning and the importance of discursive communities that are established in classrooms, viewing learning as small changes in the form of participation of learners.⁶⁰ Thus, as stated by Gee (2008), “the New Literacy Studies has begun to replace the traditional notion of literacy with a sociocultural approach” (p. 67). As literacy was seen as a “plural set of social practices” (p. 67), researchers began referring to them as literacies in the plural.

With the advent of new information and communication technologies, a group of researchers began to work with the idea of multiliteracies and “attracted educators’ attention to the way in which communicative modes were proliferating and changing due to advances in technology” (Larson & Marsh, 2005, p. 3). This group met for the first time in 1994 in the city of New London, New Hampshire, in the United States, and thus became known as the New London Group (Cope & Kalantzis, 2000). Among these researchers we find such names as Bill Cope, Norman Fairclough, James Gee, Mary Kalantzis, Gunther Kress, and Alan Luke, for example. These researchers started to show how technology began to transform the ontological and epistemological foundations of literacy, creating new social practices and influencing their contexts.

According to Cope and Kalantzis (2000), this group chose the word “multiliteracies” to summarize the results of their discussions due to two arguments: “the multiplicity of communication channels and media; [...] and the increasing salience of cultural and linguistic diversity” (p. 5). The first argument, according to the authors, refers to the “increasing multiplicity and integration of significant modes of meaning-making, where the textual is also related to the visual, the audio, the spatial, the behavioural and so on” (p. 5), that is, nowadays meaning is created in an increasingly multimodal manner. The second argument concerns the new reality imposed by globalization processes related to an “increasing local diversity” while demanding “global connectedness” and, therefore, “we have to negotiate differences every day, in our local communities and in our increasingly globally interconnected working and community lives” (p. 6). According to the authors, these two points – the multiplicity of meaning-making modes and the growing of local diversity combined with global connectedness – can potentially transform both the substance of the literacy practices and the pedagogy of literacy in our society, which requires both educators and students to take active roles aiming at social change.

Thus, the concept of multiliteracies complements and supplements the traditional notion of literacy, centered only in the national language as monolithic, singular and stable. In contrast to this traditional view of language and literacy, the concept of multiliteracies focuses

⁶⁰ Larson & Marsh (2005) explain that these small changes in learners’ participation, which they call “learning as changing participation”, are changes which occur over time as the abilities and expertise of the participants of the context grow. They also say that “people learn by participating in culturally valued activities” (p. 10).

on different modes of representation, other than language, which may vary according to the context and the culture of the social group they belong to.

The concepts of new literacies and multiliteracies, thus, are the basis for innovative approaches to understanding literacy practices present in the globalized society of the twenty-first century. Researchers currently involved in these studies focus on the notion that these literacy practices are not individual, but social, that is, they are shared by specific communities and social groups and, therefore, are plural.

LITERACY MODELS

According to Street (1984), it is possible to distinguish basically two models of literacy that are currently used in various disciplines: the autonomous model and the ideological model. In the autonomous model, literacy is seen as “a neutral technology that can be detached from specific social contexts” (p. 1). Theorists who hold this view believe that literacy plays a central role in the development of intellectual competence of individuals and that the learning of specialized forms of writing has a significant impact on language and thought. For these theorists, literate societies, that is, those who have appropriated the written culture, and oral culture societies differ from each other significantly due to “fundamental differences between oral and written language” (p. 20). According to Street, in this conception “oral language is always directed to a particular individual usually with some intended effect such as influencing his views, maintaining a certain relationship or controlling his actions” (p. 20). Moreover, this kind of language also “can be constantly modified according to its effect and thus the social function dominates the logic” (p. 20), but this requires concrete support in reality, as in face-to-face interactions in which the speaker modifies his propositions according to the listener's reactions. Street explains that “written language, on the other hand, makes such interpersonal functions less critical; it can be conducted over time and space and is less subject to immediate feedback” (p. 20).

Street further explains that for these theorists “oral speech depends on context to communicate meaning [and] it is therefore egocentric and takes for granted a common point of view as though no others were possible” (p. 21). Street says these authors believe that the written word has certain “inherent qualities” which allow the cognitive development of individuals who are literate, such as the capacity to allow abstraction and being less connected to the here and now, besides fostering the “development of ‘logic,’ the distinction of myth from history, the emergence of scientific thought and institutions, and even the growth of democratic political processes” (p. 5).

Because of these differences between oral language and written language, supporters of the autonomous model argue that “members of literate societies have the possibility of developing logical functions, of specializing in the ‘truth functions’ of language, and of extracting themselves from the embeddedness of everyday social life” (Street, 1984, p. 20). In literate societies, thus, individuals would be able to acquire, through schooling and literacy, abstract habits of thought, which would be impossible in oral culture societies. The natural consequence of the lack of writing in oral cultures, for these authors, would be a diminished intellectual capacity of individuals, in relation to the individuals of literate cultures. Literacy,

thus, would be responsible for significant cognitive differences between the two types of societies.

Street, however, counters these arguments and states that their supporters would be promoting a new version of the so-called “great divide,” that is, the classic division of societies in terms of criteria such as logic/pre-logical, primitive/modern and concrete/scientific, to add a new criterion: literate/pre-literate. Street argues that there is evidence of

scientific and non-scientific thought in all societies and within all individuals [and] representations of cognitive ‘deprivation’ [in oral cultures] were founded upon misunderstanding of the real meanings of such people’s statements and actions, and upon ethnocentric assumptions about the ways in which logic can be recognized (p. 26).

Countering the arguments of the defenders of the autonomous model of literacy, Street claims that “it is sufficient to establish the fact that to speak a language at all is to employ abstraction and logic” (p. 26). Street argues that the idea that literacy promotes the development of the logical functions of language cannot be taken as absolute, since “the consequence [of literacy] will depend on the social role, functions and meanings of its practice” (p. 41).

The autonomous model, as already discussed, argues that certain “correct” skills are necessary for the individual to achieve greater cognitive and economic development, professional advancement and hence social mobility. These skills must be taught through literacy. Bringing these ideas to the teaching of English as a Foreign Language, we can say that, traditionally, various approaches to EFL teaching already applied throughout history identify with the autonomous model described by Street, such as Grammar Translation and the Audio-lingual Method (Richards & Rodgers, 2001). In the Audio-lingual Method, the mechanical repetition in the form of drills would be responsible for producing accuracy or an ideal linguistic pattern, generating confidence in the learners, who are then responsible for transferring their learning to the situations of social life. Researchers have concluded, however, that the language forms which were repeated to exhaustion during English classes in the 60s and 70s - the golden age of audiolingualism in Brazil and in the world - could hardly be transposed to real contexts, mainly because the pedagogical contexts were in many cases distant from the students’ context of use. This method, however, is still very much used in many EFL teaching contexts in Brazil (Mattos & Valério, 2010), along with other traditional practices, such as translation, as shown in my own research conducted with three English teachers from different public school contexts in the metropolitan area of Belo Horizonte, in Brazil (Mattos, 2011). These teachers admit that, at different times, they have used or still use translation in their classrooms, in order to guarantee student comprehension. Mauricio, for example, one of the research participants, used to employ reading and translation activities frequently with his 5th grade elementary students in order to ensure that they had understood the English text. In the excerpt below, Mauricio reports on the reasons he had for asking his students to translate a short comic story.⁶¹ First, he says he asked for the translation because students would take a test based on the text. Then, he admits he requested the translation of the text because he needed time to correct the students’ notebooks.

⁶¹ See appendix.

M: Then they had to copy the comic... First I showed them how to do. Then they copied.

R: Humhum. [...] Then you asked them to do the translation at home?

M: They did it in class. Many of them have no dictionaries at home.

R: Oh, okay, so you let them do the translation in class.

M: Yeah, in class. That's it.

R: But why did you ask them to translate the comic story?

M: Oh, I thought, well, as they were going to take the test, I thought, well, just to see how they...

R: Do you think they didn't understand the text?

M: No, only by reading on their own they would not understand, for sure.

R: They wouldn't?

M: No, certainly not...

R: Not even with the aid of the images?

M: No. I made this experience. I tried... I started reading the story, and started asking them... what they thought was going on in relation to the... the images. Some groups of students could do it. Then, after that I... after that I asked them to translate it.

[...]

M: But, as I was saying to Dora... I liked the translation they did. Ahmm, because then we did collective correction, you know? They could do it, all right.

[...]

M: Another thing that led me to do that also: I had to check their notebooks. So, while they were doing the translation, I was already taking the opportunity to check their notebooks.

(Collaborative Action Research group meeting)⁶²

As we see from the excerpt, Mauricio seems not to rely on the ability of his students to understand a text from clues, or non-verbal information, such as the images in the comic story. However, he admits that some groups of students were able to understand the text content with the help of the images. Still, he asked all students to do a written translation of the text, while he corrected notebooks. This reveals that Mauricio's views on what it means to know a foreign language is still rooted in the idea of *knowing the language*, or understanding the words, regardless of any other resource that could be used to aid comprehension, as it would have been the case from a New Literacies view. Unfortunately, as indicated by some recent work in the area of language teacher education, as already mentioned, Mauricio is not an isolated case in the Brazilian context, neither was he the only participant in the research who reported the use of translation. The other two participants - Dora and Cris - also made use of translation in their classrooms. Dora, for example, said that she had always wanted her students to be "excellent translators." She also said that teachers, including herself, "are only concerned with teaching grammar rules and translation." Cris in turn, commenting on one of the activities she developed with her students, reported that she wrote some discussion questions on the board and translated each question before letting the students discuss them in groups, because she wanted to make sure that everyone had understood all the questions. This shows that these teachers still share the idea that to learn a foreign language it is necessary to

⁶² Conventions: M → Maurício (participant); R → Researcher; [...] → Comments not relevant to the issue of the comic story (see Mattos, 2011).

know the meaning of each word used, regardless of the context of use, a mechanistic view that is consistent with the concepts of the autonomous model of literacy.

Over time and due to the domination interests of various societies, written culture became prevalent in many parts of the world. Street (1984) asserts that in many literate cultures, the predominance of written language can be explained by the “important functions that writing performs in these societies” (p. 60). Therefore, writing has a higher social prestige. In his analysis, Street cites several authors who advocate that written language is endowed with greater objectivity and allows the writer to address the reader without revealing status or other social marks. Street counters the neutrality of the written language and states that both the way a person talks and the content of what is talked about may reveal social marks. Street uses the English language as an example and shows that several features widely used by the “academic language” to express neutrality and objectivity, such as the use of impersonal pronouns (e.g.: ‘one’), certain lexical choices and grammatical structures (such as the passive voice), are actually compelling marks of status and attitudes, are imbued with power and, therefore, cannot be considered neutral and/or objective. On the contrary, these choices reveal that language, both oral and written, is socially conditioned and transmits a particular worldview. According to Street, each language conveys a specific worldview, which, therefore, is never neutral or objective, and no language is capable of any objectivity that can be taken as universal. Thus, different languages would be able to express different levels of subjectivity and, on the other hand, “all languages have the potential to make abstract, relatively neutral statements, if called upon to do so” (p. 80). Street says that the alleged higher intrinsic objectivity of writing can be based on “socially constructed beliefs about what literacy can achieve” (p. 84). Therefore, one should always consider the context, taking account of the purpose of any specific statement and the place in which it operates.

Street adds that “meaning is not simply in an utterance, irrespective of the participants: to understand it we must take into account the inter-subjectivity of the participants” (p. 85), without leaving aside questions such as “who controls the meaning and the nature of the reference” (p. 85) in a given communicative relationship. Similarly, in relation to writing, the author argues that there is no ‘literal meaning,’ that can be considered neutral and may be isolated from any context. For Street, demystifying the value of writing in literate societies means realizing that any writing system is deeply tainted by cultural, economic and technological constraints of the society it belongs to and where it originated, and its meaning depends on the social situations where it is used, the participants in these social situations and purposes that guide them. Street also states that different cultures develop different conventions for writing and that each culture chooses different writing characteristics as the most significant. For him, therefore, these processes are responsible for a wide variety of different literacies.

To counter the autonomous model, Street (1984) proposes an alternative model, which he named “ideological model” or “social practices model.” The ideological model “assumes that the meaning of literacy depends upon the social institutions in which it is embedded” and that “the particular practices of reading and writing that are taught in any context depend upon such aspects of social structure such as stratification [...] and the role of educational institutions” (p. 8). The author adds that the uses that different societies make of literacy are based on conventions and, therefore, are not universal and cannot be defined in terms of technical skills, as conceived by the autonomous model.

The notion that literacy leads to progress, civilization, facilitates individual freedom and fosters social mobility – basic premises of the autonomous model – Street calls “literacy myth” (p. 104), an allusion to Harvey J. Graff’s book, in which the social historian questions this understanding. Street believes that “since the introduction of literacy [in any society] is always accompanied by the introduction of new forms of social organization, differences in thought processes cannot [...] be attributed to literacy *per se*” (p. 103). Thus, Street agrees with Graff when he argues that

greater literacy does not correlate with increased equality and democracy nor with better conditions for the working class. Rather it correlates with continuing social stratification (p. 105).

Street (1984) concludes that literacy itself, as it is practiced and learned in schools, is not “sufficient to overcome ascribed characteristics rooted in age, gender and race” (p. 106). Education, thus, serves better the dominant classes, as a way to reproduce their values and social control, than as a real form of progress and mobility for the less privileged classes. Monte Mor (2009) asserts that “the seemingly neutral practice acts ideologically in favor of an education in which teachers are seen as owners of knowledge” (p. 184) and points out that “a technique-oriented practice by itself lacks a critical approach that is often repressed by its reproductive aims” (p. 184).

Street (1984) says that the introduction of literacy in modern societies did not occur abruptly, with the suppression of oral practices and immediate replacement of these practices by written practices. On the contrary, this introduction was slow and gradual, and was facilitated by mixing oral and written modes and a gradual transition that allowed the adaptation of forms of writing to the already familiar oral practices. This overlap or “mix” of oral and written modes, at that time, was essential for the survival of culture and is still present in most societies. As Street exemplified, this overlap can be found in the use of international conventions to signal traffic on roads, a practice that “uses written words as little as possible” (p. 110), using instead icons and symbols. According to the author, “this is not merely a gesture towards those labelled ‘illiterate’ but rather a recognition that communication operates through ‘mixed’ modes for all, whether ‘literate’ or not” (p. 110).

However, the use of these international conventions is not always conflict-free. Conflict, in these cases, is frequently generated by differences between globalized cultural perceptions and the local customs and cultures of the communities where the conventions are used. As an example, in countries in North America, mainly the United States and Canada, it is common to find road signs indicating “animals ahead” with the symbol of a deer, an animal which is commonly found in that region, as shown in Figure 1 below.

This symbol has become an international convention and is used in several countries, including in Brazil, where the deer is not commonly found in cities. The Brazilian Manual of Traffic Signs⁶³ (volume II – Vertical warning signs), which describes the various warning signs to be used in Brazil, determines that this symbol is used in Brazilian public roads, as shown in Figure 2 below, which reproduces part of the Manual warning signs⁶⁴ list.

⁶³ Approved by Resolution 243, dated 22/06/2007, by the Nacional Council of Traffic, available from <http://www.dnit.gov.br/rodovias/operacoes-rodoviaras/prosinal/19-manual-vol-ii-sinalizacao-vertical-de-advertencia.pdf>, access on 15/Dec/2010.

⁶⁴ The meaning of the signs are A-35: Animals / A-36: Wild Animals.



Figure 1. Road sign indicating “animals ahead” in urban areas in the city of Winnipeg, in Canada (author’s personal archive).

	A-35	Animais
	A-36	Animais selvagens

Figure 2. Partial representation of the list of the Brazilian Manual of Traffic Signs (Volume II - Vertical Warning Signs).

However, as I have already highlighted, the animal that symbolizes the presence of wild animals in Brazilian public roads – the same deer used in other countries – is not easily recognized by Brazilian drivers. Still, the symbol is used all over the country, both in non-urban areas and in large cities, as shown in the following Figures 3 and 4.

The gradual spread of forms of literacy, according to Street (1984), resulted from the interaction of social conditions which allowed the construction of new social practices based on writing. During this gradual process, the changes that occurred over time “were relatively small and often went unnoticed” (p. 114) by the community participants. However, these small changes facilitated the larger process that established the fundamental changes for the development of a literate society, as we know it today.

Street emphasizes that whenever we talk about literacy we are necessarily “referring to the ideology and concrete social forms and institutions that give meaning to any particular practice of reading and writing” (p. 121). Street states that forms of meaning making are always learnt. These may be ways of taking meaning from books or ways of eating, sitting, etc., and are therefore not neutral, since they are always culturally determined. Children from higher social classes, for example, learn to make sense of books long before they start their school life. Street describes Heath’s (1982) work, which showed that these children “learnt

through bedtime stories an infrastructure of pedagogical practices and cultural assumptions which match, to a great extent, those they encounter in schools” (p. 121-2), which puts them at an advantage compared to children who do not go through this family training or whose training is different. Street suggests, then, that these cultural differences in the attitude of families with preschool children may be responsible, at least in part, for the success or failure of school children from different communities or social classes.



Figure 3. Example of road sign indicating “wild animals” in a non-urban area in Brazil.⁶⁵



Figure 4. Example of road sign indicating “wild animals” in an urban area in Brazil.⁶⁶

Street’s (1984) conceptions on the autonomous model and the ideological model of literacy are certainly important in helping to understand the notion of literacy and to form a set of theories that underpins much of the research on the subject today. We cannot fail to mention, however, that separating the literacy practices and their definitions in fixed models as Street did, isolating them in a binary manner, while contributing to a pedagogic explanation of the two models, also shows how they are confronted by positioning them on

⁶⁵ Available from http://bikeblogsjc.blogspot.com/2010_08_01_archive.html, access on 30/Out/2015.

⁶⁶ Available from http://bikeblogsjc.blogspot.com/2010_08_01_archive.html, access on 13/Dec/2014.

opposite sides. This fixed way of perceiving the literacy practices and conceptions fails to consider that both models are rooted in the social practices of any human activity, that is, even those who believe that literacy is a set of neutral skills with functional objectives will necessarily be perpetuating some kind of ideology. On the other hand, those using the ideological model of literacy are always also developing functional skills in their practices. It may be more appropriate, then, to conceive of literacy practices not in terms of binary models in fixed and opposite poles, but in terms of a continuum in which ideological practices and functional skills mix and overlap, sometimes predominating either one or the other. This seems to reflect a more consistent picture of the complexity and fluidity of literacy practices in any modern society.

LITERACY AS SOCIAL PRACTICE

As we have seen so far, literacy cannot be understood in a neutral way, but should always be regarded as situated in the social practices of a particular community. Soares (1998) explains that literacy, thus, should be defined as that “which people *do* with reading and writing skills in a specific context”⁶⁷ (p. 72), that is, literacy is connected to the way, or ways, in which individuals in a specific community exercise, day by day, their reading and writing skills.

Larson and Marsh (2005) argue that the concept of literacy as a social practice stemmed from studies in the field of sociology of knowledge that support the idea that reality is socially constructed. The authors state that, “in this view, knowledge (and reality) is an ongoing, dialectical construction of worldviews [...] that individuals and social groups construct in interaction with society” (p. 10). According to the authors, “these constructed worldviews are mediated by language and culture in an ongoing process of identity construction” (p. 10).

Thus, the concepts of literacy and what is possible to do with literacy are also built in the daily practices of each society. In this sense, Street and Lefstein (2007) call attention to the fact that

the ways in which teachers or facilitators and their students interact is a social practice that affects the nature of the literacy being learned and the ideas about literacy held by the participants, especially the new learners and their positions in relations of power (p. 42).

In conclusion, for Street and Lefstein, literacy is already part of the power relations in society.

Brandt and Clinton (2002) draw attention to the differences between the terms “literacy event” and “literacy practice,” two important terms that mark the history of new literacies theories. The term literacy event was introduced by Heath (1983, p. 50) who defined it as “any occasion in which a piece of writing is integral to the nature of the participants’ interactions and their interpretative processes” and Street (1984, p. 1) referred to literacy practices as a way to focus on the “social practices and conceptions of reading and writing” of a particular community. Differentiating between the two terms, Brandt and Clinton (2002) say

⁶⁷ Italics in the original.

that a literacy event is “a social action going on around a piece of writing in which the writing matters to the way people interact” (p. 342), and literacy practice is “usually treated as the socially regulated, recurrent, and patterned things that people do with literacy as well as the cultural significance they ascribe to those doings” (p. 342). For these authors, literacy events are observable actions while literacy practices are more abstract and are not always observable.

Barton (1994) says that literacy is a “social activity and can best be described in terms of literacy practices which people draw upon in literacy events” (p. 34). Barton believes that literacy events are embedded in our mental activities and are formed by our consciousness, our intentions and our actions. In addition, for him “any literacy event has a history, both at the personal and at the cultural level” (p. 35), since these events are constructed from past events recorded in our individual and social histories. Some examples of literacy events are, according to Barton, an adult reading a story to a child, a man discussing the contents of a newspaper article with a friend or taking in a message to his son (p. 36). Literacy events may or may not be linked to situations involving learning literacy.

Barton also discusses the notion of literacy practices that, for him, are “social practices associated with the written word” (p. 37). The author states that literacy practices are the various literacy events that occur in our everyday routines. In each literacy event, we make use of various literacy practices developed and/or learned during our experience from the set of social practices of our culture. In the example in which the adult reads a story to a child, mentioned above, both can make use of several typical literacy practices of their culture during this literacy event: for example, the adult can ask the child what (s)he thinks will happen and the child can answer or can ask the meaning of a particular phrase (s)he did not understand. All these practices, and others that could occur, constitute the literacy practices that took place during that literacy event. For Barton, seeing the literacy practices from the point of view of literacy events that occur in our everyday lives, and understanding how they are learned and reproduced based on the set of our social practices, can help to understand “how social institutions and the power relations they support structure our uses of written language” (p. 37).

Likewise, Barros (2009) states that social practices are always laden with language practices, which, in turn, are configured in terms of text genres. Marcuschi (2007) explains that text genres are “concrete linguistic realizations defined by social and communicative characteristics” (p. 23), such as the content, the functional characteristics and the style, among others. We can define, then, the EFL classroom as a literacy event that, at least in theory, involves a literacy learning situation and has, therefore, its own literacy practices which were socially constructed throughout the history of language teaching in Brazil and in the world.

CONCLUSION

It is common for EFL teachers to design classroom activities using different text genres. Thus, these classroom activities may be characterized as language practices, which are part of the social practices of EFL teaching in regular schools, and therefore may be considered literacy practices. These literacy practices are, thus, the ways in which EFL teachers use different kinds of text genres and language activities to teach English in their social contexts,

namely their classrooms in regular schools. These teachers, however, follow different literacy practices that are mostly consistent with traditional practices within the perspective of functional literacy or as a neutral tool, encompassing an autonomous model. In this context, teaching English is seen as a technical skill that can be taught homogeneously, without taking into account the heterogeneity of each educational context and specific social, historical and cultural needs of each learner. Learning difficulties are considered, in such cases, cognitive and personal deficiencies of each learner, who are to blame for not learning. This view exempts the school system from any responsibility with the difficulties faced by specific groups of students, creating a “deficit” model (LARSON; MARSH, 2005), as we have discussed.

Such practices have long led teachers and other school community members to separate students on opposite sides of the classroom in terms of good students and bad students, successful or unsuccessful, with or without aptitude for learning foreign languages, motivated or unmotivated, among other concepts. These concepts have been widely studied in academic research that has focused, all too often, on the individual characteristics of learners that may contribute to success in language learning. Research on such concepts, however, has failed to take into account the social and historical characteristics that also influence literacy learning processes. Moreover, as Mark (2009) has pondered, although some studies have tried to define literacy in terms of “broader sociocultural contexts, the functional view of literacy as a skill to be mastered still appears to have currency within policy making” (p. 108). The author adds that even recent official documents do not usually consider literacy as a critical practice.

In Brazil, the Curriculum Guidelines for High School Teaching – Foreign Languages (BRAZIL, 2006) has introduced the concepts and theories of New Literacy Studies to EFL teaching, advocating in favor of the urgent need to reform educational practices in our society. Lately, the document has influenced a lot of research on literacy practices in the area of teaching EFL and Language Teacher Education.

Knowing the traditional practices of literacy and recognizing their origins is a first step towards a possible pedagogical change in the EFL classroom and towards new research directions in the area. This chapter, therefore, had the objective of introducing the concepts and practices advocated by the theories of new literacies in order to foster greater use of such theoretical approaches to English teaching by teachers and researchers both in their classrooms and as the focus of their research, paving the way to a long awaited change in the teaching of EFL.

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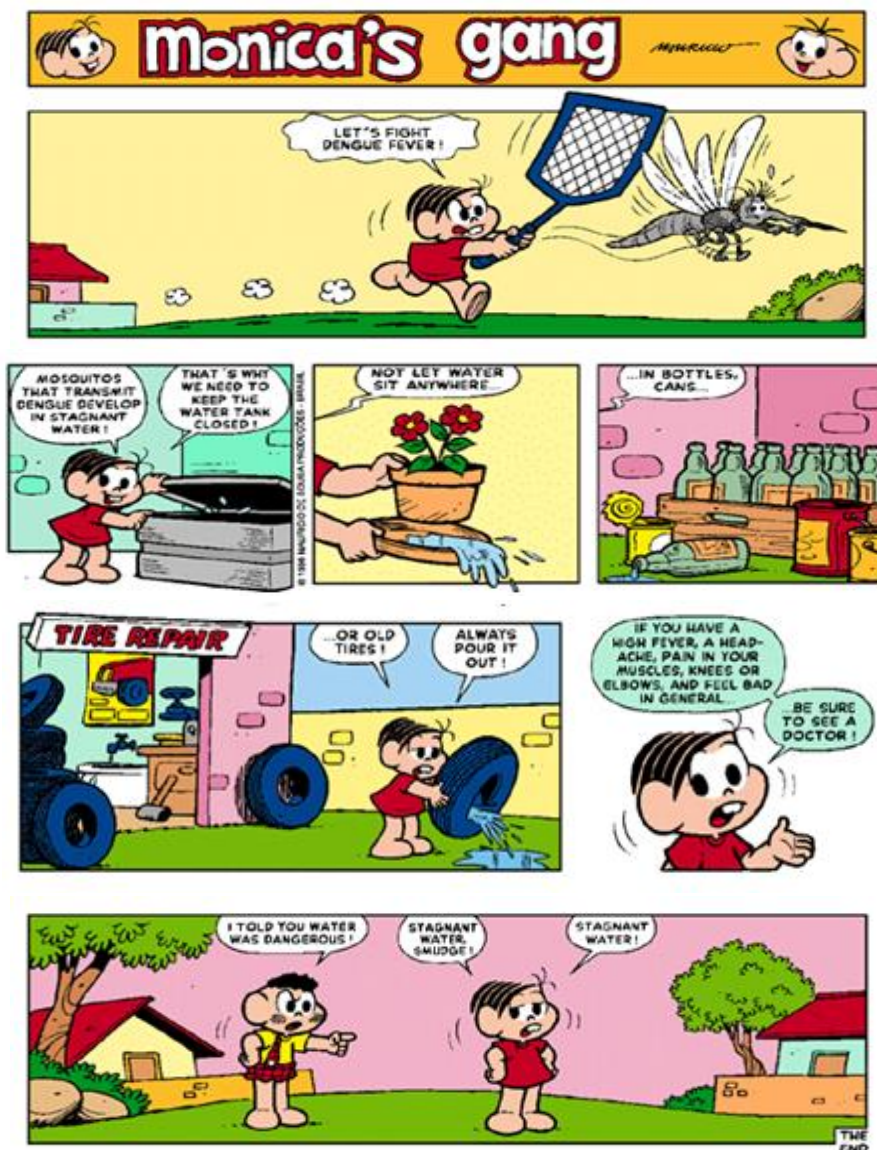
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APPENDIX



VOLUME 5

Chapter 51

**NEUROIMAGING AND APHASIOLOGY
IN THE 21ST CENTURY:
EEG AND MEG STUDIES ON LANGUAGE
PROCESSING IN APHASIA SINCE THE YEAR 2000**

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ABSTRACT

This paper provides an update on a decade of neuroimaging studies (using electroencephalography, EEG, and magnetoencephalography, MEG) that have focused on linguistic processing in patients with aphasia. The goal of this paper is to shed light on the challenges and usefulness in using such techniques for the study of aphasia. We review study objectives, techniques and results, and highlight the linguistic structures that have been studied. The first part defines the challenges and usefulness of EEG and MEG techniques for aphasiology; the second reports the procedures, targets and main results of reviewed studies; the last section addresses the following issues: What does neuroimagery add to classical behavioral studies on aphasia? Are they both necessary and why?

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INTRODUCTION

The term “aphasia” stands for language impairments that arise following a brain lesion. Aphasiology can be defined as a science that infers neurocognitive organization of the human faculty of language from the study of deficits observed in aphasic patients. It also aims at developing therapeutic treatments for language recovery.

Although the first generation of neuropsychologists (e.g., Bouillaud, Broca, Wernicke) succeeded in identifying important brain areas involved in language processing from an empirico-inductive perspective, this classical approach has since been declared insufficient for the purpose of inferring precise language organization in the brain (Démonet & Thierry, 2001). Differences in lesion site and extent, and the particular background characteristics of individual subjects (e.g., age, gender, bilingualism, treatment, etc.) give rise to high levels of heterogeneity in aphasic manifestations. This makes it difficult to correlate a given specific cognitive function with any specific brain area, based only upon the study of aphasic symptoms. However, advances in the development of neuroimaging tools have allowed researchers to assess healthy individuals in order to explore the neural underpinnings of language. They have shown that the language network in the brain is much more extended than was thought before: it involves both hemispheres and the coordinated activity of multiple structures (Hagoort & Poeppel, 2013). Thus, neuroimaging techniques should be considered as complementary tools to traditional approaches in aphasiology for the study of neurocognitive underpinnings of human language. The present chapter is concerned with neuroimaging studies that assess language processing in aphasia. We present their goals, challenges and perspectives in the context of aphasiological research. We specifically focus on studies developed over the last decade using Electroencephalography (EEG) or Magnetoencephalography (MEG)⁶⁸.

1. CHALLENGES AND USEFULNESS OF ELECTROENCEPHALOGRAPHY AND MAGNETOENCEPHALOGRAPHY TECHNIQUES FOR THE STUDY OF APHASIA

In the arena of clinical aphasiology, functional Magnetic Resonance Imaging (fMRI) studies are ubiquitous. Despite the growing number of Electroencephalography (EEG) and Magnetoencephalography (MEG) studies on normal language processing that have the potential to provide useful data for the further study of aphasia, only a few studies using such techniques to assess language processing in aphasia have so far been run. Before discussing the reasons why the use of these techniques appears to still be rare in aphasiological research, we define some basic concepts in neuroimaging research.

⁶⁸ For a review of fMRI research on language processing in aphasia, see Crosson, McGregor, Gopinath, Conway, Benjamin, Chang, Bacon Moore, Raymer, Briggs, Sherod, Wierenga & White, 2007.

1.1. Neuroimaging Techniques

fMRI, EEG and MEG are non-invasive imaging techniques that aim to characterize different aspects of neuronal activity in the brain, both in time and in space. Whereas EEG and MEG track underlying electrical activity of the brain, fMRI maps local changes in brain blood flow. EEG and MEG each provide data with high temporal resolution (measured in milliseconds). While data from EEG are limited in spatial resolution information, both MEG and fMRI allow for high-level anatomical detail. Localized neural activity from MEG data is called electromagnetic source imaging (EMSI). In turn, fMRI detects local increases in relative blood oxygenation and provides good spatial but relatively poor temporal resolution (Halchenko, Hanson & Pearlmuter, 2005).

Traditionally, much of the research on brain imaging in patients had used magnetic resonance imaging (MRI, i.e., brain images based on magnetic resonance fields) combined with fMRI methods to study language processing in aphasia. MRI is used to visualize the brain structures and any architectural pathology which may be present, but not the cognitive functions of the brain. During *functional* magnetic resonance imaging (fMRI), participants perform a particular task during the imaging process, causing increased metabolic activity in the area of the brain believed to be linked to cognitive processing demands caused by the task. In this case, changes in blood flow are measured and superposed on the MRI. The usefulness of fMRI is clearly linked to this method's high imaging resolution for brain structures and lesions, which have obvious advantages when studying patient populations. However, this approach has a major disadvantage in the time domain, as recording time resolution is quite low (in the order of seconds, as it takes between 1 and 2 seconds for *Blood-oxygen-level dependent* (BOLD) levels, which are what are measured using fMRI, to change following a stimulus). As we know that language processing operates within hundreds of milliseconds after stimulus presentation, and unfolds rapidly and quite automatically over time during the processing of a stimulus or a sentence, much information on the time-course of language processing is not available to us using this method.

More recently, the use of event-related potentials (ERPs), which are electrical waves extracted from the EEG signal, have allowed for more fine-grained interpretations of ongoing cognitive processes during language processing, and have become an important source of evidence on the functional organization and temporal dynamics of language processing. ERPs are characteristic patterns of voltage change extracted from scalp-recorded electrical brain activity, time-locked to the presentation of critical linguistic (or other) stimuli (Luck, 2005). They can provide information at the level of millisecond-by-millisecond changes in brain activity. Systematic differences between ERP waves (or "components") in different experimental conditions can be used to study and understand neurocognitive processes involved in different aspects of language processing. ERP components differ in terms of polarity (whether deflections are negative or positive going), onset latency (when the curves depart from each other), duration (how long deflections last), topography (what their distribution is on the scalp), latency shifts (differences in onset or offset latency depending on experimental conditions or populations), and amplitude (the size of the difference between ERPs in two or more conditions).

EEG measures coordinated electrical brain activity. To record an EEG, electrodes are placed over multiple areas of the scalp to detect patterns of electrical activity. Scalp-recorded activity generated by the co-activation of tens of thousands of neurons in a region of the

neocortex engaged in cognitive operations results in the ERP components observed. A number of ERP components linked to linguistic sub-domains such as phoneme discrimination, word segmentation, prosodic and intonational phrasing, morphology, conceptual semantics, syntax, discourse processing, and more have been identified in the last forty years (Hagoort & Poeppel, 2013). It should be noted that there is no one-to-one mapping between specific linguistic sub-domains and ERP components. That is, multiple domains of language processing can elicit similar ERP components, while processes involving what are considered to be unitary processes in linguistics (e.g., agreement checking) can elicit multiple components in the ERP wave. However, the waves found in specific linguistic contexts (e.g., morphosyntax, syntax, and word processing) are quite stable across experiments and languages, and therefore allow us to study the neurocognitive underpinnings of normal and impaired processing of language. For example, the N400, a negative-going wave peaking around 400 ms after stimulus presentation has been used since Kutas and Hillyard (1980) in tracking lexical access and semantic integration.

Magnetic resonance imaging (MEG), which measures magnetic fields linked to electrical activity in the brain, allows for similar fine-grained analyses of ongoing neurocognitive processes. In addition, this technique can provide better spatial resolution than ERPs because of the nature of the recording (see Rodden & Stemmer, 2008). The MEG equivalent of ERP is the event related field (ERF). ERFs measure changes in magnetic fields, again linked to the processing of a critical stimulus. ERFs show similar timing and amplitude changes as those found in ERPs but are always positive going, never negative. As with ERPs, reliable ERF components are observed in language-based experiments (see, e.g., Salmelin, 2007). However, they are not as widely used as ERPs for the study of language processing, in part due to higher operational costs for MEG.

1.2. Challenges in Neuroimaging Research on Aphasia

Research into the neural basis of language processing is complicated by many factors linked to the specificities of aphasic populations (Démonet & Thierry, 2001). The considerable variability of lesion size, shape, and location and individual backgrounds may give rise to different spatial and temporal brain activity patterns. In some cases, it might be more suitable to analyze results at the individual subject level, rather than at group levels, in order to draw conclusions on the neurofunctional organization of impaired language processing.

On the other hand, the use of neuroimaging techniques also faces methodological challenges when used to assess impaired linguistic systems after brain damage. EEG and ERFs are characterized by their great temporal resolution. This means that they are highly sensitive in detecting ongoing cognitive events being processed in the brain, which are expressed through voltage or magnetic changes. But being sensitive to the most discrete implies being affected by the less discrete, which can be a disadvantage for data analysis and interpretation. Indeed, strong artifact signals generated by eye, mouth and tongue movements can mask cortical activity measurements related to cognitive processing.

Even though progress has been made to remove disruptive field patterns from the MEG data (Salmelin, 2007), imaging language production in aphasia remains challenging. For instance, in neurotypical participants, trial onset timing is defined according to the tight

temporal relationship between stimulus presentation and response. However, patients' average response latencies are much longer and variable, making it tedious and less useful to set up an experiment that integrates measures of speech output speed and accuracy (Crosson et al., 2007). Moreover, ERP and MEG experiments need to present numerous stimuli in order to overcome high signal-to-noise ratios. This, coupled with the inherent inter-subject variability, creates larger signal to noise ratios in patients than with neurotypical participants. This might explain why, despite their apparent usefulness for the study of neurocognitive processing, we find very few ERP and MEG studies that have been carried out on aphasia and language production.

Rare neuroimaging studies have dealt with language production in aphasia (Sörös, Cornelissen, Laine, and Salmelin, 2003). To our knowledge, no study has yet assessed either phrase or sentence production in aphasics. The assessment of overt speech in patients with aphasia is useful, as it allows investigators to track response accuracy with the goal of determining if specific brain areas are necessary for the production of correct linguistic outputs. However, language production studies are constrained by the necessity to remain still during data collection and recording, and are additionally problematic with ERP as muscle movements create artifacts in the EEG wave.

This is probably the main reason why most neuroimaging studies of aphasia assess language comprehension. However, problems can emerge while assessing comprehension in patients with aphasia, as it can also be delayed and variable. Moreover, covert tasks prevent investigators from checking whether participants apply instructions accurately or have understood the stimuli. Finally, since aphasic participants may have difficulties either in retrieving words, or in producing responses once words are retrieved, it remains unclear whether observed activation patterns reflect word retrieval or post-retrieval response production difficulties.

In addition, some studies reviewed here (e.g., Angrilli, Elbert, Cusumano, Stegagno & Rockstroh, 2003) mainly focus on brain lateralization patterns rather than the time course of cognitive processes, which is unusual in ERP studies where timing effects are more relevant than their distribution over the scalp, due to the inverse problem⁶⁹. Because of poor spatial resolution in ERPs, this methodological approach is usually not appropriate for research questions bearing on localization. The technical challenges related to the use of neuroimaging in aphasia (experiment modality, setting up time) in addition to problems linked to behavioral approaches (high variability of lesion sites and extent, distinct background, variable syndromes, different reorganization etc.) raise the issue about the point of doing research on aphasia using such techniques. The following section presents some benefits of neuroimaging studies for aphasiological research.

⁶⁹ The fact that the neural correlates of the recorded activity on the scalp cannot be inferred from the electrode(s) where the activity was recorded, due to distortion from brain and scalp tissue. This is one reason why some researchers prefer MEG or fMRI to ERPs, as they do not suffer from this problem.

1.3. Usefulness of Neuroimaging Techniques for the Study of Language Processing in Aphasia

Currently, one of the main issues addressed by neuroimaging (especially fMRI) studies of aphasia is the role of the non-dominant, usually right hemisphere, versus perilesional cortex in language recovery. Meltzer, Wagage, Ryder, Solomon, and Braun (2013) argue that the use of neuroimaging helps to determine whether increased hemisphere activity during language tasks performed by individuals with aphasia represents takeover of function by regions homologous to the left-hemisphere language networks, maladaptive interference, or adaptation of alternate compensatory strategies. In addition, recent findings highlight the usefulness of temporally sensitive measures when studying aphasia by demonstrating that the latency of electrophysiological markers is of interest in patient populations (Zipse, Kearns, Nicholas & Marantz, 2011).

Both EEG and MEG approaches have obvious advantages in the study of language impaired populations, as they can be used with auditory stimuli, avoiding reading processes that might be impaired in patients, in addition to providing fine-grained information on the time-course of linguistic-cognitive processing. The information that they provide is thus complimentary to traditional approaches for the assessment of language difficulties in special populations, in particular because of their added value of measuring ongoing processes in language comprehension and production, rather than providing end-state data (reaction time and judgment values) or average brain activations patterns over rather long time periods, as is found in fMRI.

Finally, most studies of aphasia have reported dissociations that emerge behaviorally but not at the level of the brain. These indicate the possibility of compensatory strategies in patients' behavior. For instance, Meltzer et al. (2013) observed that right hemisphere activation can be observed with both accurate and inaccurate comprehension performance, which they interpreted as strategic recruitment of alternative networks rather than homologous takeover. Zipse et al. (2011) report that whereas participants with aphasia did not show semantic priming of the M350 (an electrophysiological marker of lexical processing in MEG, roughly equivalent to the N400 in ERPs), they did exhibit significant behavioral semantic priming. Semantic priming studies with neurotypical subjects can also show dissociations between behavioral and ERP data, especially with semantic priming (see Royle, Drury, Bourguignon & Steinhauer, 2012 for a review). Sörös et al. (2003) note a dissociation between noun and verb retrieval that only emerges after the disruption of the normal language network, and which is not visible with electrophysiological tools. Wassenaar and Hagoort (2007) also report that while control individuals show on-line sensitivity to thematic role assignment⁷⁰ between pictures and the sentences, aphasic participants did not display typical on-line ERP patterns, but showed off-line sensitivity to the sentence-picture mismatches.

Such data are of particular interest for aphasiological research as they seem to indicate that aphasic performance is the result of specific deficits bypassed by cognitive strategies. Thus, neuroimaging techniques offer the opportunity to illustrate and measure an assumption that has already been suggested in the literature on aphasia based on behavioral studies, namely that aphasia is not the pure manifestation of underlying linguistic deficits, but the sum

⁷⁰ That is, knowing which noun is the subject (agent) or the object (patient) of the verb, as in *the girl is pushed by the boy*, where the first noun in the patient of the verb and the second one the agent.

of linguistic deficits compensated by cognitive strategies (Kolk & Van Grunsven, 1985; Kolk, 1995; Nespoulous, 1996; Sahraoui & Nespoulous, 2012). It appears fruitful to pursue both on-line and off-line approaches in order to obtain complimentary perspectives in our understanding of language processing in aphasia.

2. EEG AND MEG STUDIES ON LINGUISTIC PROCESSING IN APHASIA: PROCEDURES, RESULTS AND ANALYSES

A general impression that we can take from ERP and MEG studies on language processing is that only a few have used this approach to assess language processing in aphasia. Moreover, most concern language comprehension, and if they deal with language production then it usually is by way of picture naming tasks, that is the production of isolated words. Finally, they generally aim to determine which brain areas or hemispheres are activated – either the non-dominant hemisphere or perilesional areas – in individuals with aphasia performing specific linguistic tasks, in order to identify brain areas involved in language recovery. The present section is divided into three subsections: the first two present recent studies on lexical-semantic and syntactic processing run with aphasic patients; the third contains some remarks regarding our general assessment of these studies.

2.1. Lexical Processing

An ERP study by ter Keurs, Brown and Hagoort in 2002, investigated written word recognition in Dutch-speaking patients with Broca's aphasia (BA), and patients with right hemisphere damage without aphasia (RH), and controls. They asked participants to categorize items according to their word category (open and closed-class words). Of primary interest were ERP negativities linked to early word detection (the early anterior N210-325) and later lexical-semantic integration (the N400, for a review of studies on lexical semantic-processing involving this component, see e.g., Holcomb & Grainger, 2006 and Kutas & Federmeier, 2011). Controls and RH patients showed typical early and late negativities, in addition to a third later anterior negativity, to closed-class words, while patients with BA did not show either anterior component, in addition to presenting a delayed N400 that was longer lasting than those found in the other two groups. It should be noted that the items in this task were not controlled for frequency or length. Thus the closed-class items should have been perceptually salient, as they are typically shorter and more frequent than open-class words⁷¹. These data seem to signal difficulties in early word class detection in patients with BA and may account for observed syntactic difficulties in these patients.

Another ERP study on lexical access using semantic and associative priming again investigated the N400, here modulating it with prime presentation using associative relations (i.e., a word preceded by a semantically related word, e.g., salt-pepper)⁷². In their Japanese auditory study of lexical access in 10 participants with aphasia with auditory processing

⁷¹ Additional analyses integrating these factors did not show specific effects of frequency of word length on the data, however.

⁷² Priming typically reduces the N400 amplitude.

impairments, and 10 controls, Kojima and Kaga (2003) presented related and unrelated word pairs to participants. They observed longer onset and offset latencies, as well as smaller amplitudes for the N400 to unrelated pairs in patients. A correlation between the size of the N400 and an auditory comprehension score that was gathered before the experiment was also found. Behaviorally, the patients' recognition scores for the experimental items were normal but their reaction times were slower than controls. Unfortunately, the groups' ERPs and response patterns were not directly compared in the global ANOVAs, but only in post-hoc *t*-tests. According to the authors, the correlation between the offline measures and the N400 points to the usefulness of the N400 in establishing or confirming a diagnosis of lexical access impairment.

An ERP study led by Angrilli, Elbert, Cusumano, Stegagno and Rockstroh (2003) presents data on rhyming and semantic judgment with word pairs in 10 Italian participants with non fluent aphasia and 10 controls. Using primed rhyming pairs (i.e., a word preceded by another with which it rhimed, e.g., *cat-hat*) or semantically related pairs (e.g., *wood-tree*) and fillers, they asked patients to make rhyming and semantic judgments on the stimuli. Data show different lateralization patterns in controls and patients, as well as longer reaction times and higher error rates in patients. Unfortunately, data were not analyzed on the target but rather the prime. Although stimuli were presented in different blocks, where participants were specifically asked to perform a phonological (rhyming) or a semantic task, thus promoting phonological versus semantic strategies to word recognition, the fact that analyses were made on the first rather than the second word makes it difficult to interpret this data in terms of lexical access, and makes the interpretation more about cognitive strategies used tasks rather than lexical access itself. We have no way of telling whether rhyming or semantic priming had any effect on lexical access and retrieval. In addition, the authors present no functional interpretation of the ERP patterns.

Another lexical-decision task using ERPs was developed by Justus, Larsen, Yang, de Mornay Davies, Dronkers and Swick (2011). They studied a group of patients with aphasia resulting from damage to the pars opercularis (BA44) and the pars triangularis (BA45), i.e., roughly Broca's area, and a group of controls. The authors adopted lesion-based rather than symptom-based inclusion criteria, because they wanted to test the hypothesis that damage to frontal areas -- including Broca's area -- results in a behavioral dissociation between regular verb and irregular normal verb processing, linked respectively to procedural and declarative memory systems (Ullman 1997, 2005). Several studies in healthy people have reported priming stronger effects (reductions of the N400) for regular versus irregular verb forms using ERPs (Münte, Say, Clahsen, Schiltz & Kutas, 1999)⁷³ or behavioral methods (see Forster, 1999, for a review). In previous studies, Justus and colleagues (Justus, Larsen, de Mornay Davies & Swick, 2008; Justus, Yang, Larsen, de Mornay Davies & Swick, 2009) observed that in neurologically healthy individuals, hearing the past tense form of both regular and irregular verbs facilitates an auditory lexical decision to the corresponding present-tense target (e.g., *looked-look*, *spoke-speak*) and is accompanied by a reduction in the N400 component to the target word. On the other hand, other studies reported behavioral dissociations between regular and irregular morphological priming in a group with aphasia

⁷³ Although, see Stockall and Marantz (2006) and Morris and Stockall (2012) for data on *equivalent* MRF and ERP priming for regular and irregular verbs, but not for semantically and orthographically related words (e.g., *boil-broil*).

(Marslen-Wilson & Tyler, 1997; Münte et al, 1999; Tyler et al, 2002). Therefore, in their study, Justus et al. (2011) aimed to test whether this dissociation extend to ERPs in a group with Broca's aphasia. Again, their study highlights a dissociation between behavioral and ERP data: whereas behavioral data show that irregular forms prime more than regular ones, ERP data show similar priming effects for both regular and irregular forms, in patients as well as controls. According to Justus et al. (2011), the ERP data demonstrate preserved lexical integration of all verb types. Thus the absence of behavioral regular-verb priming may not be attributable to pre-lexical or lexical access deficits. The authors reason that the absence of significant regular-verb priming in the response time data rather resulted from post-lexical events (covert articulation, segmentation strategies, and/or cognitive control)⁷⁴.

This study addressed current topics in the domain of neurolinguistics and psycholinguistics, which are still being debated, such as the existence of a dual division of English verb forms (regular/irregular) that links up to distinct neurocognitive processes (procedural/declarative systems) in the brain; whether English verb forms are better classified in a categorical (regular/ irregular) or rather a continuous way depending on morphophonological properties of verb forms (Justus and colleagues defend the view of a gradual, continuous, classification of verbs, distinguishing "weak" and "strong" irregulars, e.g., *send/sent*, and *drive/drove*, as being more and less "regular" respectively); and whether regular/irregular dissociations extend to ERPs. However, we note that the discussion is developed around the relationship between past tense and corresponding present tense forms, but the items used in the present tense in English are morphophonologically identical to infinitive verbs (e.g., *speak*). This may impact on the conclusions drawn by Justus et al. "that the lexical entries for the present-tense targets were successfully pre-activated by the past-tense primes" (p. 13). Indeed, the "cognitive path" (i.e., computational operations) between past tense forms and corresponding present-tense verb forms might not be the same as the one between past-tense forms and infinitives.⁷⁵ In order to test present tense forms in English that cannot be confused with infinitives, 3rd singular forms (e.g., *speaks*) would be more suitable.

Zipse et al. (2011) assessed lexical access in patients with aphasia, age-matched and younger controls, all native speakers of English, using MEG. Their goal was to explore whether individuals with aphasia exhibit differences in the M350, an ERF linked to lexical access and integration (roughly the equivalent of the ERP N400), compared with healthy controls. They also attempted to explore whether M350 differences were associated with either phonological or semantic processing deficits. They used a primed lexical decision task including two stimulus types: identity primed (i.e., a word preceded by itself, e.g., *cake-cake*) and semantically primed (e.g., *bread-cake*), along with control pairs, with targets corresponding to the identity and semantically related pairs but with different primes (e.g., *leg-cake*). Participants were instructed to decide as quickly and as accurately as possible whether the second word in each stimulus pair (i.e., the target) was a real or a nonsense word. The MEG data were analyzed to examine M350 latency amplitude in terms of (a) overall between-groups differences, (b) semantic priming within each group, and (c) identity priming within each group. Consistent with the age-matched control group, the group with aphasia

⁷⁴ Note that the ERP data cannot be interpreted as reflecting *only* pre-lexical or lemma level access to the lexicon since the primes are not masked. Post-lexical effects can be found in ERP priming studies (see Kiefer & Brendel 2006; Kiefer, 2006; and Royle et al., 2012 for a discussion of issues related to task designs and semantic priming effects).

⁷⁵ In addition to the fact that infinitives (citation forms) are typically the most frequent forms in English.

showed both identity and semantic priming behaviorally. In contrast to the control group, the patient group did not show either semantic or identity priming of the M350 response. They also demonstrated longer M350 latencies than either control group. Furthermore, within this group, M350 latencies were positively correlated with a measure of semantic impairment. According to Zipse et al. (2011), increased M350 latency appears to be indicative of a semantic processing impairment⁷⁶. Moreover, they suggest that the dissociation between the electrophysiological and the behavioral results observed in the group of patients — i.e., no semantic priming of the M350 but behavioral semantic priming — is likely due to the fact that whereas the M350 directly tracks pre-lexical and lemma level activation, reaction times reflect the sum of many cognitive processes, including post-lexical checking (Lorch, Balota, & Stamm, 1986). Therefore, they assume that some patients with aphasia might have a lexical activation deficit at the semantic level, coupled with preserved abilities to use strategic post-hoc lexical processes for word recognition. However, since the groups were not directly compared on priming effects, these data are not supported by appropriate statistical methods.

Sörös et al. (2003) present one of the few studies on language production using MEG. However, production was limited to object and action naming from picture stimuli, that is the production of isolated words (nouns and verbs respectively). The purpose of their study was to assess whether the dissociation largely described in the aphasic literature between noun and verb processing can be observed at the neurophysiological level. The study included 10 healthy Finnish speaking university students and one patient with anomia (JP). The drawings illustrated a simple scene including an object and an action. The same stimuli were used for action and object naming. JP showed superior naming of verbs compared to nouns, due to a left posterior parietal lesion. We note that the nature of the verb form elicited in action naming task is not clear. Sörös et al. (2003) only mention that “[b]oth words [objects and actions] used for the instructions are familiar Finnish expressions and have an identical word length.” (p. 1789). However, the prompt “tekee” used to elicit a verb is either translated ‘does’ or ‘is doing’. From a theoretical perspective, it seems relevant to describe the linguistic nature of the stimuli, because priming the production of, and producing, either infinitive, progressive, or inflected 3rd singular present tense verbs may have different implications for neurocognitive models of language processing, and might also simply promote different responses in different patients.

No evident differences were observed in brain activation related to noun and verb retrieval in any participant, despite the fact that a clear behavioral dissociation between noun and verb retrieval was observed in JP, who showed more difficulties in naming nouns than verbs. MEG measurements revealed a specific activation pattern for JP’s object naming in the left inferior frontal cortex, roughly Broca’s area, that was distinct from his action naming as well as from the naming-related responses in controls. Broca’s area seemed to be involved both in action and in object naming, but was activated significantly earlier and more strongly when naming objects. On the other hand, since JP showed increased naming latencies for nouns compared with verbs, the authors argue that this result suggests a temporally deviant and impaired activation of Broca’s area in JP, and conclude that differences in brain activation related to noun and verb retrieval are not evident in healthy individuals but only emerge after the disruption of normal language networks. They also claim that this study is

⁷⁶ However, note that they do not directly test phonological priming, as their “phonological” pairs involved repetition priming.

the first to demonstrate a neurofunctional basis for a dissociation of verb and noun production in an aphasic patient.

In sum, several studies used EEG or MEG to assess lexical access in aphasia. They concern various languages: English, Dutch, Italian, Japanese, and Finnish have been investigated. All but one used a priming task. The study by Söros and al. (2003) is the only one that used a language production task that involved picture naming. All mentioned studies assessed lexical access using isolated words; none used a sentential context. Lexical priming involved open and closed-class words, words of the same semantic fields, rhyming pairs, non words, regular and irregular verbs, past verb forms, and nouns and verbs. Generally, they tracked the N400 ERP component (or the M350 ERF one), to investigate lexical processing and deficits in this domain in participants with aphasia. Results from these studies show a varied picture of impairment, where ERP components in patients do not always reflect, or correlate with, behavioral data.

2.2. Syntactic Processing

Using ERPs to identify strengths and weaknesses in Dutch patients with Broca's aphasia, Wassenaar and colleagues developed three auditory experiments involving sentence comprehension (Wassenaar, Brown & Hagoort, 2004; Wassenaar & Hagoort, 2005, 2007).

Wassenaar and colleagues (2004) assessed morphosyntactic agreement processing in comprehension of simple and complex sentences that required Subject-Verb agreement within conjoined versus embedded clauses. They compared processing of sentences such as *De vrouwen betalen de bakker en nemen/*neemt het brood mee naar huis*, 'The women pay the baker and take/*takes the bread home' (conjoined sentences with less complex syntax) and *De vrouwen die de bakker betalen, nemen/*neemt het brood mee naar huis*. 'The women who pay the baker take/*takes the bread home' (embedded clauses with more complex syntax). The study included three groups of participants: patients with Broca's aphasia (BA), patients with a right hemisphere lesion without aphasia (RH) and controls. While controls showed a typical Syntactic Positive Shift (SPS, often also called the P600, a positive component emerging around 600 ms after critical stimulus) to agreement errors, this component was modulated by deficit severity in the BA group. That is, the stronger the deficit in the patient, the smaller the P600 was. The RH group evidenced normal ERP components and behavioral results. However, no between-group analyses were performed to support differences between patients and controls, which is less than ideal (Nieuwenhuis, Forstmann & Wagenmakers, 2011).

In a follow up study, Wassenaar and Hagoort (2005) compared processing of syntactic and semantic violations in order to track syntactic processing difficulties in a similar group of patients with Broca's aphasia, again in comparison to patients with right hemisphere lesions without aphasia and controls. In the syntactic violation condition, a word-category violation was created by adding a verbal suffix (e.g., -t) on a noun stem, in a position that was ungrammatical given the syntactic context (e.g., *De houthakker ontweek de ijdele schroef/*schroeft op dinsdag*. 'The lumberjack dodged the vain propeller/*propelled on Tuesday'. In the semantic violation, sentences ended with a word that violated sentential-semantic constraints (e.g., *De timmerman kreege en compliment van zijn baas/!bloem*. 'The carpenter got a compliment from his boss/!flower.' ERPs in the syntactic condition show

similar results to the previous study, that is a SPS (or P600) for both the Control and RH groups, and a late and very reduced SPS for the BA group. In the semantic condition, results show expected N400 and SPS components for both the control and RH groups, and a reduced and more focal N400, as well as a reduced SPS, in the BA group. The BA group also shows reduced P300s in an oddball task used to track automatic detection of stimulus (tone) changes. However, their results on the P300 did not correlate with the size of the P600, pointing to distinct cognitive mechanisms. Between-group analyses support differences on syntactic but not on semantic processing. The authors argue that ERPs can identify syntactic structure processing difficulties with BA, and that these processing difficulties can be independent of lexical access, which appears to be normal in the BA patients.

Finally, Wassenaar and Hagoort (2007) assessed thematic processing in similar groups (BA, RH and controls), by way of a picture-sentence matching task, contrasting semantically *irreversible active* sentences (e.g., *The young woman reads the exciting book*), semantically *reversible active* sentences (e.g., *The tall man pushes the young woman*), and semantically *reversible passive* sentences (e.g., *The woman is pushed by the tall man*). Previous studies on neurotypical German participants report a negativity followed by a positive shift (N400-P600) in argument structure violations where thematic roles (agents and patients) do not match up with the verb structure (Friederici & Frisch, 2000; Frisch, Hahne & Friederici, 2004). Results on irreversible active sentences with picture mismatches (i.e., the participants hear *The exciting book reads the young woman* and see [WOMAN READING BOOK]) show a typical biphasic N400-P600 in controls and RH groups, but only a late in P600 in the BA group. Processing reversible active sentences with incongruent images (i.e., the participants hear *The tall man pushes the young woman* and see [WOMAN PUSHING MAN]) induced a similar N400-P600 complex in controls and the RH groups (the P600 being non significant in controls), while no effect was observed in the BA group at the verb, and a slight negativity was observed sentence finally. Finally, reversible passive sentences in incongruous conditions (i.e., the participants hear *The woman is pushed by the tall man* and see [WOMAN PUSHING MAN]) elicited an N400-P600 in controls, a small P600 (with statistically marginal effects) in the RH group and no ERP components in the BA group. The ERPs of the BA group were clearly different from RH and control groups: whereas typical ERPs were observed in all sentence types in RH and control groups, the BA group showed a positive shift time-locked to the onset of the verb only for semantically irreversible sentences. Interestingly, in this study, the authors highlight a dissociation between BA participants' online electrophysiological and offline behavioral measures, suggesting that strategies might be used to compensate their online syntactic processing difficulties. Results demonstrate that BA participants seem to have strong difficulties matching up thematic roles in sentences and images even though off-line behavioral sensitivity to the sentence-picture mismatches were observed.

Similarly, Kielar, Meltzer-Asscher and Thompson (2012) used ERPs to investigate verb argument structure processing in agrammatic aphasia. A grammatical judgment task was assigned to English-speaking participants with agrammatic aphasia, as well as healthy young and older adults. Two conditions were tested: argument structure violations and semantic violations. The latter was included to determine whether participants evidenced the classical N400 effect to semantic anomalies and to investigate possible differences in sensitivity to argument structure and semantic information during sentence processing. In the argument structure condition, a transitive verb was replaced by an intransitive verb, creating an abnormal syntactic context frame (e.g., **Anne sneezed the doctor and the nurse*), since an

intransitive verb does not select direct objects. In the semantic violation condition the final word of each sentence was semantically inappropriate (e.g., *Anne visited the doctor and the !socks*). Participants were instructed to press a green or red button based on their correctness judgment of each sentence. While controls showed a negativity followed by a positive shift (N400-P600), agrammatic individuals only showed a late positivity in response to argument structure mismatches. Additionally, participants with agrammatism showed a relatively preserved but reduced N400 response to semantic violations. According to the authors, these data show that individuals with agrammatism do not demonstrate normal real-time sensitivity to verb argument structure during sentence processing. They conclude that individuals with agrammatic aphasia are impaired in the on-line use of verb information during the integration of individual arguments into an overall sentence context.

More recently and using MEG, Meltzer et al. (2013) assessed sentence comprehension in aphasia by manipulating syntactic complexity in English sentences. Their study included 25 participants with aphasia of various types (e.g., mild-moderate anomic aphasia; mild nonfluent, mild to moderate fluent aphasia; mild anomic aphasia; mild conduction aphasia; moderate Broca's aphasia; very mild anomic aphasia) who retained sufficient language comprehension abilities to participate in the task. Their results were compared to data previously collected from young healthy controls assessed using the same paradigm (Meltzer & Braun, 2011), in addition to controls that were matched in age with the patients. A sentence-picture matching task was used to assess the comprehension of clauses with different levels of syntactic complexity (simple active, subject-embedded, and object embedded), which were either semantically irreversible (simple active: e.g., *The man is washing the glass in the kitchen sink*; subject embedded: e.g., *The man who is washing the car is doing a sloppy job*; object-embedded: e.g., *The glass that the man is washing has a small chip in it*) or reversible (simple active: e.g., *The man is teaching the woman about a hard math problem*; subject-embedded: e.g., *The man who is teaching the woman is discussing a hard problem*; object-embedded: e.g., *The man who the woman is teaching is discussing a hard problem*).

The main goal of this study was to compare behavioral and imaging measures within the group of aphasic patients. Moreover, this study aimed to determine whether increased right hemisphere activity during language tasks reflects functional takeover by regions homologous to the left-hemisphere language networks, maladaptive interference, or adaptation of alternate compensatory strategies. According to Meltzer et al. (2013), their data provide a measure of neural activity related to sentence comprehension, and of sentence content maintenance in short-term memory, which in turn allows them to deal with the controversy opposing two points of view on the nature of syntactic comprehension deficits in patients with aphasia (and object-embedded relative clauses, in particular): Whereas some investigators assume a loss of specialized syntactic processing mechanisms (e.g., Caramazza, Capitani, Rey, & Berndt, 2001; Draai & Grodzinsky, 1999), others suggest a depletion of more general-purpose cognitive resources that are required to handle processing demands of such sentences in working memory (Caplan, Waters, Dede, Michaud & Reddy, 2007). As expected by the investigators, results showed that patients performed well above chance on irreversible sentences, and at chance on reversible sentences of high complexity on off-line tasks. Moreover, they did not observe more activation of the right temporal lobe in aphasics relative to controls, nor that activation correlated with performance. But accurate comprehension was correlated with neural activity in the more dorsal fronto-parietal lobes of the right-

hemisphere, particularly during the memory delay period. Since these areas have been assumed to be involved in working memory (see e.g., Postle, 2006, and Wager & Smith, 2003) and other tasks involving high demands on general cognitive resources such as attention and executive function, Meltzer and colleagues (2013) suggest that patients who successfully compensate for left temporal lobe damage seem to recruit more general cognitive resources during the effortful process of determining sentence meaning. The authors interpret successful sentence comprehension in aphasia as being supported by reanalysis of sentences in verbal short-term memory, which may draw more heavily on right hemispheric networks in aphasic patients than in controls.

The patient group heterogeneity is a useful addition to the discussion about the nature of syntactic comprehension deficits, as argued by the authors: indeed, the fact that every single one of their patients exhibited comprehension failures on the same clause type (i.e., object-relative clause), regardless of the size, location, and extent of their lesion, supports a resource depletion account rather than the loss of specific comprehension mechanisms that would be “located” in one specific part of the brain.

However, in our opinion, in relation to the experimental protocol used in this study, some parameters should be more carefully taken into account in assessing patients with aphasia using neuroimaging techniques. In particular, the total time of the experiment, which was “approximately one and a half hours, including preparation” (Meltzer et al. 2013, p. 1251), seems too long and might induce fatigue, especially given the nature of the task (syntactically complex sentence comprehension) and environment (staying in a machine). After such a long session in such conditions, and because the task consisted in pressing the left or right button on a fiber optic response box to indicate which picture correctly depicted the action described in the sentence, the interpretation of randomness in response patterns is questionable.

In sum, ERP and MEG studies on aphasic morphosyntactic comprehension mentioned in this chapter concern languages less diverse than in studies that deal with lexical processing (see previous section): English, Dutch and German, that is only Indo-European (Germanic) languages. They study subject-verb agreement processing in sentences with different degrees of syntactic complexity (conjoined/embedded, active/passive and irreversible/reversible), verb argument structure (transitive/intransitive) and thematic roles (agent/patient), as well as semantic processing within sentences. Generally, they track both negative (LAN/N400) and positive (SPS/P600) neural signatures linked to lexical and syntactic processing in aphasic individuals, in comparison with neurologically impaired participants without aphasia or controls. Most evidence seems to point to difficult online processing of grammatical errors and complex syntactic structures in patients, as compared to semantic processing.

2.3. Remarks on Linguistic Manipulations in Experimental Tasks

A common approach to semantic and word finding deficits in aphasic patients is to study naming and other lexically-based processing, which is clearly not optimal when we want to assess language processing in its full complexity. The use of sentence structures to study semantics can give us a clearer view of semantic processing *in-context*, and would also allow for a better understanding of the facilitating and hindering factors in semantic processing within sentences in aphasics. As we saw, patients' results on semantically oriented questions in the sentence processing tasks were occasionally similar to controls. Semantic processing

within sentences, a common technique in ERPs (Kutas & Hillyard, 1980; Kutas & Federmeier, 2000), should be developed to better understand what aspects of sentence processing are impaired, or processed differently, in patients with aphasia, especially those with semantic deficits.

In addition, we note that no study compared different groups of aphasic speakers. Some, such as Wassenaar and colleagues compare neurologically impaired patients with and without aphasia, but not between different aphasic subgroups. Since similar symptoms can arise from different lesions -- for example, word retrieval deficits technically called anomia, are found in many aphasia subtypes -- it might be useful to assess neural activity of a group of individuals with anomia in order to identify different deficits and strategies used during lexical access, even though off-line data show the similar superficial behavior across patients. Studies on single word lexical processing in patients with word-finding problems could also be refined in multiple ways using priming with phonological, orthographic, morphological or semantic priming pairs in order to better understand the naming deficits observed (Royle et al., 2012; Royle & Courteau, 2013).

In 2008, Laganaro, Morand, Schwitter, Zimmermann and Schnider published an ERP study on naming in four anomic patients and controls, using delayed picture naming. Patients were tested pre and post therapy, in order to check whether specific deficit patterns and subsequent recovery could be mirrored by ERP patterns and changes in these over time. The delayed naming paradigm they used avoided movement artifacts in the ERP, while allowing for the evaluation of lexical activation in preparation for production. They asked French-speaking participants to name a series of line drawings. Behaviorally, patients showed improvement and maintained improved naming after treatment. They showed intermediate results on their ERP patterns, with normalization in the ERP signatures for the three patients with lexical-phonological difficulties but persistent deviance patterns in the patient with a lexical-semantic impairment. Further testing after six months showed additional pattern normalization in two patients with lexical-phonological difficulties in early time windows (100-300 ms after stimulus presentation) but more deviant patterns in later time windows (300-600 ms). Hemispherization changes were also observed in the patients, which might indicate the use of compensatory strategies in lexical access. This study seems to show that early automatic word (or image) detection can normalize over time but later (lexical-phonological or lexical-semantic) processes do not, despite better behavioral responses. It also appears that specific response error types (or strategies) can be reflected in the ERP profile. Unfortunately, little information is presented on the interventions that were used for the patient's lexical access difficulties.

In a follow-up study in 2009, Laganaro, Morand and Schnider tested 16 patients with anomia, half with lexical-semantic deficits and the other half with lexical-phonological ones, and controls, again using delayed picture naming. Here a more detailed analysis of differences between the two groups of patients gives added depth to their data, namely showing that the N400 component linked to lexical access and integration was reduced in lexical-semantic patients, while present in lexical-phonological ones. A later positive-going deflection was observed in lexical-phonological patients only. This later component is believed by the authors to reflect difficulties in word-form encoding. However, this does not match up with the present state of knowledge on lexical processing, carried out for the most part on unimpaired populations, where word form information precedes lexical-semantic processing (see e.g., Holcomb & Grainger, 2006; Royle et al, 2012). What this study does

imply is that it is possible to identify different anomic impairment types and response strategies in patients. However, one must note that in this study, the patients were quite variable in their post onset times (1 month to 6 years). Because normalization in patients can take 6 months to one year, and, as the previous study shows, patients pre- and post-treatment can exhibit changing ERP patterns, the data cannot be used to conclusively support neurocognitive distinctions between subtypes of anomia patients.

As we have seen throughout this chapter, many neuroimaging studies use comprehension tasks. They have the added advantage of not eliciting verbal responses in patients while targeting aspects of language that are difficult to probe in elicitation or spontaneous speech paradigms. Future studies should put more emphasis on morphosyntactic comprehension in aphasics and take advantage of cross-linguistic richness in multiple languages in order to create experiments that can assess morphosyntactic comprehension, a known domain of difficulty in patients. For example, Pourquié (2013) demonstrates that pro-drop languages are perfectly suitable for the assessment of verb inflection comprehension in aphasia. Since the pronoun or noun phrase subject is optionally phonologically realized in pro-drop languages, speakers are often forced to extract grammatical information about subjects through verb inflection *only* (e.g., the Spanish verb form: [PRO3s] *come*/ [PRO3p] *comen*, eat.3s/p 's/he eats/they eat'). In comparable English contexts, the grammatical properties of the language, i.e., obligatory overt subjects, make it unclear whether speakers distinguish singular and plural agreement through verb inflection (-s/Ø) or pronouns (*he/they*), and where patient's difficulties may lie. Hence, pro-drop languages are perfect candidates to assess morphosyntactic comprehension, as they allow the creation of tasks focused on verb inflection comprehension. Conversely, since many published studies of aphasia concern English, tasks assessing verb inflection usually investigate past tense processing because its marking is morphologically overt: e.g., *They play* vs. *They played* (e.g., Holland, Brindley, Shtyrov, Pulvermüller, Patterson, 2012). There is extensive literature on tense deficits in aphasia – and past tense processing in particular, (e.g., Bastiaanse, 2013) – reporting that individuals with agrammatic aphasia have problems producing inflected verb forms. In addition to assessing past tense processing using neuroimaging, it would also be relevant to test verb comprehension in the present tense in order to identify possible deficits not involving PAST. This would allow investigators to examine whether or not aphasic individuals show difficulties comprehending verb inflection, even in simple structures (e.g., active sentence in the present tense).

Therefore, the present chapter reiterates the need for more cross-linguistic studies and studies of multilingual speakers that would provide further insight on the neurocognitive underpinnings of impaired linguistic systems after brain damage, and rehabilitation. Indeed, as mentioned above, studies that assessed morphosyntactic comprehension in patients with aphasia concern languages that are structurally close. Given the varieties of syntactic structure configurations found across languages (Cinque & Rizzi, 2008), more cross-linguistic comparisons would be useful to further examine these innovative but preliminary findings.

Hence, a general remark we want to express through this chapter is that neuroimaging studies of aphasia should not only be neuroanatomically motivated but also linguistically and psycholinguistically driven. We have noted that neuroimaging studies on aphasia are far more concerned with neuroanatomic aspects of language recovery, i.e., neural plasticity, than by cognitive flexibility. Crosson et al. (2007) note that “clearly more attention should be focused on what are the structures that can contribute, the circumstances under which they can

contribute, how to engage those structures in the service of language rehabilitation, and how to suppress activity in structures that might interfere with optimizing language performance.” (p. 160). Here the word “structure” refers to anatomical structure.

From a more cognitive and linguistically driven approach, and in the interests of both theoretical and therapeutic perspectives, it would be of particular relevance to determine for example, which *linguistic* structures (e.g., active, passive, declarative, negative, question, embedded or not) or domains of language (e.g., lexical, morphological, syntactic, phonological, prosodic) are recoverable and which ones are not; how peripheral and core cognitive functions linked to language are impaired; whether the same type of linguistic structure is equally impaired in one language or another in multilingual patients or across languages (Menn & Obler, 1990; Gitterman, Goral & Obler, 2012); whether or not a significant relationship is identifiable between the functional nature of recovery and neuroanatomical reorganization of the brain. This opens a large program of research, which should not forget that aphasia is, in its essence, a “linguistic problem” (Jakobson, 1963) and that today, aphasiology is an interdisciplinary research field that benefits not only from cutting-edge technologies but from the combined expertise of linguists, psycholinguists and neuroscientists (Nespoulous, 1994). Finally, although most studies suggest the deployment of cognitive strategies in aphasia, there has been little characterization of these strategies in terms of linguistic and cognitive processes.

3. WHAT DOES NEUROIMAGERY ADD TO CLASSICAL BEHAVIORAL STUDIES ON LANGUAGE PROCESSING IN APHASIA?

Functional neuroimaging techniques, fMRI in particular, have been primarily used in the context of aphasiology research to study reorganization of brain-based language substrates in aphasia. More recently studies using EEG and MEG techniques attempt to measure brain activation involved in different linguistic tasks in aphasic individuals. In addition to studying language processing in patients with aphasia and to comparing it to neurotypical language processing, neuroimaging studies can be useful in determining training benefits and their impact on neural reorganization, in the context of aphasiology. For instance, Cornelissen, Laine, Tarkiainen, Järvensivu, Martin and Salmelin (2003) show that behavioral improvements were accompanied by changes in cortical dynamics in language training (re-learning) in chronic anomic patients.

Other studies have developed linguistically driven treatments. The Treatment of Underlying Forms (TUF) (Thompson & Shapiro, 2005) considers both the lexical and syntactic properties of the sentences used during treatment as well as those selected for generalization testing. An important observation emerging from their study is that training on more complex but related structures yields more wide-ranging treatment improvement than using simpler structures as a starting point. Such results have important implication for intervention. Using MEG, Faroqi-sha (2008) reports results from a study of treatment effects on recovery in 6 individuals with chronic agrammatic aphasia. The task focused on morphosyntactic comprehension. Sentences were correct (e.g., *Yesterday the teacher graded the exams*), semantically anomalous (e.g., *Yesterday the !honeybee graded the exams*) or morphologically anomalous (e.g., *Tomorrow the teacher *graded the exams*). Semantically

anomalous sentences were included as a control condition since individuals with agrammatic aphasia are known to process these sentences with high accuracy (Hagoort, Wassenaar & Brown, 2003). All participants demonstrated quantitative and qualitative changes in neural activity following therapy, and the final spatiotemporal patterns were similar to those found in neurotypical participants. According to Faroqi-sha (2008), these results demonstrate that neurophysiological changes following language therapy were specific to the linguistic process that was targeted, and not the result of general cognitive or compensatory mechanisms.

Thus, in the context of therapeutic research, the use of neuroimaging can help to measure the effect of treatment patient populations, as well as on specific language processes. Another avenue of neuroimaging research would be to study the effects of specific types of treatment on recovery (or changing) behavioral patterns in patients, and their link to normalization or maintenance of deviant ERP components. ERP studies on bilingualism have recently shown convergence on first language learner profiles by second language learner's ERPs (White, Genesee & Steinhauer, 2012), in addition to the effects of language training approaches on this process (Morgan-Short, Steinhauer, Sanz & Ullman, 2012). A research program of this type integrating therapeutic approaches should be a fruitful avenue of investigation.

In sum, studies on intervention and neuroimaging in aphasia language processing support the following claims. 1. Neuroimaging research on sentence and word processing in healthy speakers can be used as a complimentary approach to behavioral studies of aphasia, in particular for the development on neurocognitive models of language processing following brain lesions. 2. Neuroimaging studies of aphasia can help distinguish deficits and strategies, and specify the role of right hemisphere and perilesional areas (as long as MEG or fMRI are used for localization) in recovery, as well as measure treatment effects on brain activation during language processing. 3. Neuroimaging and behavioral approaches are both necessary and provide complimentary data on language deficits and processes, as they focus on different aspects of language production and comprehension: neuroimaging is not always suitable for the assessment of language production, and it cannot clearly assess the qualitative strategic aspects of recovery, while off-line language comprehension tasks can result in ambiguous results in terms of their interpretation. In fact, brain activation should not be the only matter of interest, as structures produced by patients in off-line responses to specific targets can provide us with rich information about processes and strategies used to provide linguistic outputs. Thus, an integrated approach to language processing deficits in aphasia should be pursued, not only using on-line and off-line methods for evaluation, but also with the combined knowledge of linguistics, clinical professionals such as speech language pathologists, and neuroscientists.

CONCLUSION

The classical syndrome approach of aphasia is considered to be unstable for the identification of neurocognitive underpinnings of normal language processing. Correlations between lesion areas and language impairments can be unreliable due to systematic post-lesional reorganization of the brain and high inter-individual differences in aphasic populations. However, neuroimaging allows us to examine patients as individuals or groups, and can be regarded as a complementary tool to the behavioral approach, in the context of

aphasiology, especially in view of the information they can provide regarding the times course of underlying cognitive processes. On the other hand, many challenges exist within different neuroimaging techniques for the study of normal language processing, and even more exist in aphasiology. Despite the complexities of neuroimaging experimental design, some studies are being carried out on aphasia and open a promising research pathway. Aphasiological research enriched by the development of neuroimaging addresses issues such as the differentiation between language deficits and cognitive strategies used to overcome these. Brain activation and areas involved in language recovery, and treatment effects on cognitive flexibility and brain plasticity are some of the domains that can be directly assessed using neuroimaging techniques. Since behavioral results show dissociations not observable in imaging, the classical syndrome approach should however not be abandoned or overlooked. In particular, this chapter outlines the necessity to qualify the linguistic nature of deficits and strategies in addition to illustrating them through brain imaging. As both approaches fulfill different functions and bring to the fore qualitatively different data, aphasiological research should be able to take advantage of their distinctive and complimentary benefits in further studies.

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Chapter 52

LANGUAGE PROCESSING IN CHILDREN WITH SPECIFIC LANGUAGE IMPAIRMENT: A REVIEW OF EVENT-RELATED POTENTIAL STUDIES

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ABSTRACT

Recent advances in neuroimaging have allowed for insight into the millisecond-by-millisecond unfolding of language processing in the brain. In particular, event-related brain potentials (ERPs), non-invasive measures of scalp-based EEG (electroencephalographic) recordings of underlying brain activity, can reflect on-line neurocognitive processes involved in linguistic processing. In this chapter we will present a review of ERP research focusing on lexical-semantic, morphosyntactic and syntactic processing during language comprehension in children with and without specific language impairment (SLI). We will highlight results important for our understanding of SLI, as well as methodological issues and challenges involved in ERP research.

INTRODUCTION

Specific Language Impairment

Specific language impairment (SLI) is a language learning impairment often described as below-normal language proficiency in the presence of preserved general cognitive development (Leonard, 1998). SLI is usually diagnosed using exclusionary diagnostics and cannot be explained as being caused by other factors such as autism, neurological impairment or linguistic deprivation (Leonard, 2003). Children with SLI have reduced vocabulary development at early ages and typically exhibit difficulty in manipulating linguistic rules of

inflection and derivation, as well as complex syntactic structures, in their native tongue. Their language comprehension is usually better than their production. Children with SLI can also present difficulties in domains such as articulation, pragmatics or even fine motor control, as well as reading and writing disorders. The study of children with SLI speaks directly to theories of language acquisition and language representation and processing, as the question arises as to what underlying problem is causing the observed language difficulties. It is not the goal of this chapter to present an extensive review of all theories of SLI. For this, we refer the reader to the seminal book by Leonard (1998) or a more recent review by Grela, Collisson, and Arthur (2013). Here we will present three hypotheses for the causes of SLI that can be empirically tested using ERPs.

A first hypothesis is that children with SLI present a general processing deficit, that is reflected in slower linguistic processing, but have relatively normal linguistic representations (e.g., Kail, 1994; Johnston, 1997; Leonard, 1998; Grela et al., 2013). The assumption here is that children with SLI have limits in their processing capacities, or a subset of general cognitive abilities, that slows down production, comprehension or language acquisition. Thus the observed difficulties in language production or comprehension are secondary to a more general cognitive processing deficit. A second hypothesis is that children with SLI have a developmental delay in language acquisition, that is they have normal linguistic and other cognitive abilities but later timing in the triggering or onset of language acquisition processes (Locke, 1994). Under this hypothesis, children with SLI should be believed to have relatively normal language acquisition abilities, but with later milestones than unimpaired children. A third hypothesis is that children with SLI have relatively intact cognitive abilities, with the exception of the grammar or specific subcomponents of grammar (e.g., Clahsen, 1989; Rice, Wexler & Cleave, 1995; Gopnik, Dalalakis, Fukuda, Fukuda, & Kehayia, 1997). In this case, general cognitive processes are not impaired in children with SLI but language-specific modules are, and in particular, productive rules of grammar such as tense marking, agreement, long-distance dependencies or other structural aspects of syntax, but also phonological and morpho-phonological rules. Various criteria are typically used to identify children with SLI in different languages (e.g., a difference between verbal and non-verbal IQ, having language scores below a certain cutoff as compared to unimpaired children, specific difficulties with sub-components of grammar, etc.). Because languages differ in their typologies and complexities, these most probably play a role in the different criteria used to identify SLI. Thus, the experimental data are based on heterogeneous groups. Because few ERP studies have even investigated language processing in SLI using ERPs, we will include all studies that we find relevant to our review while leaving it up to the reader to check the sources for a fuller description of the populations studied, and their inclusion criteria.

Event Related Potentials

ERPs are measures of voltage change patterns from scalp-recorded electrical brain activity using EEG that are time-locked to the presentation of stimuli (Luck, 2005). Differences between the ERP “components” elicited by linguistic manipulations can be used to tease apart the action of brain-based neurocognitive behavior involved in different aspects of language processing. ERP components differ in whether they are negative or positive going (polarity), their timing (onset latency), how long they last (duration), what their scalp

distribution is (topography), and whether the component peaks shift in latency (peak latency). This method has recently seen advances in the study of child language acquisition, both in impaired and neurotypical populations. Previous research has identified a number of ERP components relevant to identify and distinguish mental operations in linguistic sub-domains such as phoneme discrimination, word segmentation, prosodic and intonational phrasing, morphology, lexical semantics, syntax, discourse processing, and more.

Much of the ERP research (although not all) has focused on error-based paradigms, where a control condition (grammatical and semantically appropriate) is compared to ungrammatical, incongruous or otherwise difficult to process structures. These paradigms often use stimuli that resemble those of grammaticality judgment tasks traditionally used in behavioral research. One important feature of ERPs is that they can record ongoing sensitivity to grammatical or semantic errors across the entire utterance or sentence (measuring data points at each millisecond). This is a major advantage over traditional psycholinguistic tasks, but also online tasks such as lexical decision, self-paced reading and grammaticality judgment tasks, as the measurement is not based on a reaction time measure, linguistic output, or a judgment performed at the end of processing. In fact, grammaticality judgments are not even necessary to induce ERP effects (Royle, Drury, & Steinhauer, accepted). Rather, this method allows us to observe the unfolding of multiple domains of linguistic knowledge (phonetic, phonological, lexical, morphosyntactic, syntactic, and semantic) during the processing of linguistic stimuli. In the study of child language acquisition, a major selling point of ERPs is that you can elicit them without asking a child to perform any task. In some paradigms paying attention to the stimuli is not even necessary, although this is not usually the case for language structures involving lexical semantics and (morpho-)syntax at higher levels of processing.

Child ERPs

To date, relatively few studies have investigated ERP correlates of lexical-semantic, morphosyntactic and syntactic processing in children, and even less in SLI. Those studies that do, usually find differences between typically developing children and adults (when adults are included), but also between children with SLI and their peers, in terms of ERP latency, duration, scalp distribution or amplitude. However, as we will see below, specific patterns are influenced both by the linguistic domains studied and by age. Therefore, a good understanding of maturational effects on ERPs is necessary to understand the experimental data on SLI children. It has been suggested that linguistic and cognitive abilities in children influence their ERP patterns. Friederici (2002) links longer ERP latencies in children, as compared to adults, to slower processing speed in general. More recently Wray and Weber-fox (2013) establish a link between ERP patterns and performance on off-line cognitive and linguistic tasks in English-speaking children aged 7 to 9 years. In their study, children were divided into low- and high-normal groups on non-verbal IQ, morphosyntactic processing and word recall. Results seem to support the view that cognitive strengths (and weaknesses) might

correlate with ERP patterns⁷⁷. However, before we review the evidence on ERPs in children with and without SLI, we must first present some issues relating to their interpretation.

Methodological Issues

A number of caveats should be outlined before we move to the next section on linguistic ERP components. In particular, issues arise in child language studies that make our understanding of the data and results less than straightforward. A first challenge is to establish typical ERP profiles in normally developing children (Phillips, 2005). Few studies have focused on morphosyntactic and syntactic processing in normal language development, and the present state of knowledge is still quite sparse. Working with children also presents special challenges to the experimenter in terms of the ability of a child to do the task. In particular child participants' working memory and attentional capacities can strongly impact on language processing (see, e.g., Hildebrand, 1987 for children, and Friederici, Steinhauer, Mecklinger & Meyer, 1998 for adult ERP data). Because we still do not fully understand the impact of these factors on ERPs, especially in children, nor the interaction between these factors and language abilities, it is likely that further work on processing limitations is needed before we can fully understand their impact on child data.

Another issue linked to studies of children with language impairment is group matching with controls. Traditionally, research in language impairment will study psycholinguistic processing and clinical behavior in children with SLI and age-matched groups, in addition to language matched groups (e.g., matched on mean length of utterance, receptive vocabulary, or some other measure). In some cases, only language-matched groups are used as controls. These groups tend to be a few years younger on average than the children with SLI. However, as we shall see, the available data on brain maturation show important changes in neurotypical children's ERP profiles across different ages. It is therefore unwise to use only language-matched controls in ERP experiments, as differences observed between impaired and unimpaired groups could simply be linked to maturation effects on brain organization, and to cognitive specialization and possibly automatization.

It goes without saying that stimuli must be adapted to the linguistic abilities of children. Complex structures and late acquired vocabulary (even if of high frequency) must be avoided. This is even more critical when studying children with language impairment, as lexical representation deficits and morphosyntactic abilities might be diminished in these groups. Unless the research question is directly related to syntactic complexity, syntactic structures should be as simple as possible and controlled across conditions. For example, ungrammaticality effects in passive structures in German show adult-like ERPs starting only at the age of 7 (Hahne, Eckstein & Friederici, 2004). Another issue is the use of written versus auditory stimulus presentation. A few of the studies presented below (for the most part with neurotypical children) use written stimuli, but most prefer auditory presentation. One advantage of written presentation is that stimuli are generally much easier to prepare, as no

⁷⁷ Non-verbal IQ is linked to processing speed (indexed by earlier onset of ERP components), verbal recall is linked to resource allocation for linguistic tasks (indexed by ERP component amplitude), while morpho-syntactic abilities are linked both to processing speed (as indexed by earlier onset of syntactic components) and to resource allocation (indexed by ERP component amplitudes). Note however that the morpho-syntactic condition presents baseline issues, see Methodological Issues.

issues arise related to recording quality, splicing, avoiding intonation and other extraneous cues in the input. However, written presentation limits the lower ages at which we can test children's linguistic abilities and results from this type of study probably do not faithfully reflect true linguistic abilities in children. In addition, written presentation taxes working memory, as sentences are presented one word at a time to avoid eye-movement artifacts in the EEG recording. Children might be especially overloaded in these conditions, and children with reading disabilities, as is sometimes the case in children with SLI, even more so. However, auditory presentation also has its problems, because subtle cues as to the grammaticality of structures might be present long before the errors arise (for example, lengthening of vowels sentence-initially, intonation accent on errors or even abrupt changes in the intonation phrase when structures are spliced to create ungrammatical sentences). All of these cues are known to affect the ERP patterns and might even be the direct cause for some components that have been observed in the literature (Steinhauer & Drury, 2011).

Focusing on morphosyntactic and syntactic violation paradigms (see e.g., Friederici 2002), which are starting to be used in the study of language acquisition and SLI, a number of methodological concerns can be voiced. The two most important ones relate to how stimuli are created for ERP studies. A first issue is the nature of the errors created. Here we take two examples from Atchley, Rice, Betz, Kwasney, Sereno and Jongman (2006), but this study is by no means unique. They present agreement errors of the type '*Where *do a boy like to play?*' where the verb 'do' does not agree with the singular subject 'a boy'.⁷⁸ Note however that the sentence is not yet ungrammatical at the point where the ERP is analysed: at a. Consider the following alternative possible grammatical continuation after 'like': *Where do a boy like you and a girl like her like to play?* Other possible continuations are left up to the reader to discover. Importantly, this means that, when listening to this sentence, the point where we realize that it is ungrammatical is further downstream, at 'to'. The ERP wave elicited at 'a' is therefore not expected to reveal grammaticality effects. Another example, this time of a syntactic (structure) violation, is also taken from the same study. Here the auxiliary is deleted to create an outright structural violation as in '**Where Ø a boy like to play?*' Again, the sentence is not ungrammatical at the determiner. An alternative possible continuation would be '*Where a boy likes to play is anyone's guess*'. Again, it is only at 'to' that we can be certain of this sentence's ungrammaticality.

Other researchers create ungrammatical structures by inserting or transposing items, usually function words, as in *The scientist criticized Max's *of proof the theorem* (Neville, Nicol, Barss, Forster & Garrett, 1991), or by excluding an expected content word in a context that highly predicts it (e.g., *Die Gans wurde im gefüttert*, 'the goose was in-the fed', as compared to *Die Kuh wurde im Stall gefüttert* 'the cow was in-the barn fed', Hahne et al., 2004). In the second case, with deleted elements, it is quite difficult in fact to create outright violations. More importantly, both types of phrase structure errors also create baseline problems (see Steinhauer & Drury, 2011, for an in-depth discussion of these two issues). In ERPs, baseline corrections are used to correct for pre-target-word voltage differences (the target condition and its matched control), effectively bringing them to zero (also called *DC offset*) before the experimental manipulation. The baseline interval is a period of usually 50 to 200 ms pre-stimulus where the ERPs are 'brought together' in order to measure the 'true' effects linked to

⁷⁸ Throughout this chapter, the underlined word, here a, signals the point where the ERP was analyzed for a given condition.

the critical stimulus of interest. The assumption is that up to the target word, the two conditions are identical and that any observed differences should be linked to the psycholinguistic manipulations of the experiment. We illustrate baselining in the hypothetical situations in Figure 1.⁷⁹ In Figure 1A, a comparison between correct and incorrect conditions is made without baseline correction. What we can observe is that both conditions show early differences after stimulus presentation (0 to 300 ms), but also before it (-200 to 0 ms) and no differences in the middle time-window. When the baseline is brought back to zero (in B), to compare the specific effects of our conditions we observe that the differences now occur in the N400 time window (see below for a discussion of components).

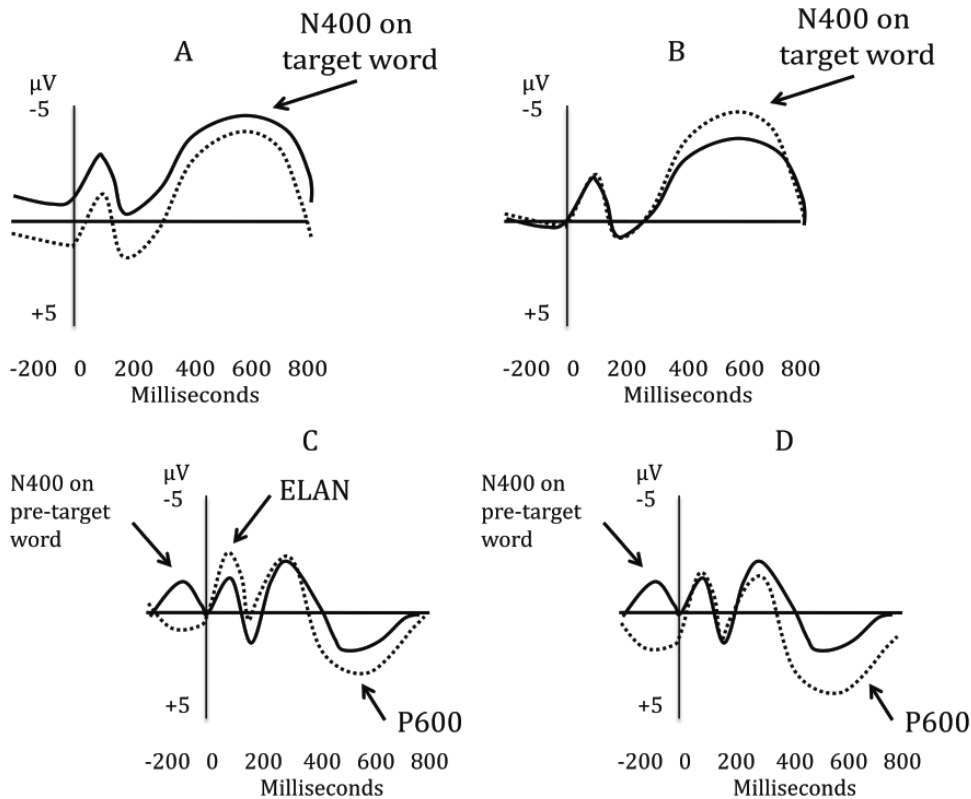


Figure 1. Comparison of hypothetical correct (full lines) and incorrect conditions (dotted lines) without baseline correction (A) and after baseline correction (B). In C we show how unmatched conditions can impact on ERP baseline correction and early negative and late positive ERP components by pushing up the negativity in early time-windows and reducing late positivities. In D we present an illustration of what the ERP components *might* look like without baseline correction problems. Negative is plotted up and positive is plotted down.

Since we know that different words (and especially the difference between content and function words) can modulate the ERP signal (e.g., Münte, Wieringa, Weyerts, Szentkuti, Matzke & Johannes, 2001), having different types of lexical items in the baseline prior to the critical word can create DC offset effects into the ERP signal, most noticeably creating

⁷⁹ Note that following European tradition, negative ERP deflections are plotted *up* and positive ones are plotted *down*.

artifacts in the shape of stronger early negativities and smaller late positivities in the wave (1C), where the ungrammatical condition was more positive and the grammatical one more negative going in the baseline interval. Bringing these two conditions together in the baseline has the effect of pushing the ungrammatical condition into a more negative-going wave and the opposite effect for the grammatical one, thus creating an early negativity (the ELAN, see below) and reducing the amplitude of the P600. In 1D an example of how the results might look like without this DC offset effect is illustrated. Baseline correction problems are not a trivial matter and create serious issues in data interpretation.

Finally, we should note that many studies do not properly establish differences between participant groups by means of between-subjects ANOVAs. It is not sufficient to establish that one group shows a significant effect on some measure while a second does not (Nieuwenhuis, Forstmann & Wagenmakers, 2011). It is unclear to us why a number of these scientific articles do not perform direct statistical comparisons of their groups. Suffice it to say that for the reasons outlined here and above, we will often use conditional language in interpreting the available data. In the next section, we first present a review of well-known linguistic ERP components and move on to child language studies focusing on these same components. Following this we will review available ERP data on language processing in SLI.

ERP COMPONENTS AND THEIR LINGUISTIC CORRELATES

The N400: Lexical-Semantic Integration

The N400, first described in Kutas and Hillyard (1980), is a negative going wave with a central-parietal scalp distribution observed between 300 and 500 ms after stimulus presentation. It can be elicited by semantic expectancy violations, for example *He spread the warm bread with !socks/ butter* (Kutas & Federmeier, 2000). This component can be observed in bimodal (auditory-image or image-text) lexical-semantic violation conditions, where an incongruous or unexpected image is presented concurrently with an auditory or written utterance, whether it is in a noun phrase or a sentence context (Friedrich & Friederici, 2004; Willems, Özyürek, & Hagoort, 2008; Courteau, Royle, Gascon, Marquis, Drury & Steinhauer, 2013).

The LAN/P600 Complex: Grammatical Processing

Grammatical errors involving tense, gender and subject verb agreement in auditory and visual paradigms elicit left-lateralized anterior negativity (LANs) or bilateral anterior negativities (ANs) between 300 and 500 ms after stimulus presentation (Gunter, Friederici, & Schriefers, 2000; Molinaro, Barber, & Carreiras, 2011; Royle et al., accepted). These are usually followed by a later positive-going wave (P600) emerging between 500 and 1000 ms after stimulus presentation (Osterhout & Mobley, 1995)⁸⁰. Because, the P600 is elicited in

⁸⁰ Note that the P600 also appears in semantically incongruent conditions discussed in the previous section (see e.g., Holcomb, Coffey & Neville, 1992; Jutonen, Revonsuo & Lang, 1996). Jutonen and colleagues do not

many different paradigms (including those with complex syntactic structures), some have proposed that this component indexes processing load relating to syntactic integration or reanalysis, and that it is not specifically dedicated to grammatical processing (Steinhauer & Connolly, 2008). Thus the biphasic LAN/P600 complex is thought to reflect: (i) automatic morphosyntactic parsing indexed by the (L)AN, and (ii) structure integration or reanalysis indexed by the P600. Although the LAN is argued by some to be unstable and not a reliable component of morphosyntactic processing (e.g., Osterhout, McLaughlin, Kim, Greenwald & Inoue, 2004), others have argued that the P600 can be modulated by task, and is in fact more likely to reflect controlled processes than the LAN (e.g., Royle et al., accepted). In addition, these two components might appear at different stages in maturation, as we will see below. Suffice it to say that a majority of morphosyntactic ERP studies find both components for ungrammatical structures in adults. We thus review research showing both or either of these components to morphosyntactic errors.

The ELAN/P600 Complex: Syntactic Processing

Violations of syntactic structure (i.e., word category violations) also elicit biphasic waves that are often considered to be different from those found for morphosyntactic errors. Structural errors such as that found in *The scientist criticized Max's *of proof the theorem* elicit very early (often left-lateralized) anterior negativities (ELANs) between 100 and 200 ms after the target word, followed by the later P600 (Neville et al, 1991; Hahne et al., 2004). Similar to the LAN, the first negativity is thought to be an index of automatic parsing, but in this case of word category information (i.e., Noun, Verb, Preposition, etc.). A few studies of syntactic error processing have found LAN/P600 complexes rather than ELAN/P600s for this type of structural error (see a review in Friederici, 2002). An issue with a majority of the studies showing ELAN/P600 complexes to syntactic errors is that they suffer from baseline correction issues, which might be driving the ELAN effects observed (see Steinhauer & Drury, 2012). However, baseline correction problems were avoided in Hasting and Kotz (2008), who observed ELAN/P600 complexes to phrase-structure violations in two word utterances (e.g., *er kegelt* 'he bowls' vs. *er *Kegel* '*he cone (noun)').

LINGUISTIC ERPs IN CHILDREN

Lexical-semantic N400 effects similar to those in adults can be observed in early childhood. Friedrich and Friederici (2004) showed that incongruous picture-word stimuli presented to 19-month-old children elicit N400-like components. They compared semantically congruous (where the auditory name of the object *chair* matched the image CHAIR) and incongruous conditions (where the name *chair* did not match the image BALL). In the incongruous conditions, the authors observed a broadly distributed negativity over frontal and centro-parietal scalp regions between 700 and 1400 ms. This negativity is similar to the N400 observed in adults, which however starts somewhat earlier (at about 300 ms) and

observe it in children aged 5-11, while Holcomb's group demonstrates it in written and auditory ERPs with children (written: age 9-10; auditory: age 7-8) but do not discuss it in their article.

has a more focal prominence at parietal sites. Undergoing similar bimodal stimuli presentation, English-speaking children present N400 waves similar to adults in terms of latency and scalp distribution at the age of 7 years old (Cummings, Čeponienė, Dick, Saygin & Townsend, 2008). A developmental study of lexical-semantic processing in sentence contexts by Holcomb, Coffey, and Neville (1992) shows that a semantically incongruous noun (e.g., *Kids learn to read and write in !finger/school*) elicits a N400 in children as young as five years old in the auditory modality. Similar results have been found in English-speaking children aged 3 and 4 years (Silva-Pereyra, Rivera-Gaxiola & Kuhl, 2005), English-speaking children aged 8 to 13 years (*Where does a !chair/boy like to play?*)⁸¹ Atchley et al. (2006), German-speaking children between the ages of 6 and 13, using sentences such as *Das !Baby/Lineal wurde gefüttert* 'The baby/straight edge was fed' (Hahne, Eckstein & Friederici, 2004), and in French-speaking children aged 4 to 9 using sentence-visual presentation with a visual mismatch to the auditory noun (i.e., hear: *Je vois un train brun sur la table* 'I see a brown train on the table', see: [a brown SHOE on the table], Courteau et al., 2013). Thus the lexical-semantic N400 for auditory sentence processing appears at very early stages of language acquisition in visual-auditory single-word or sentence paradigms, as well as in auditory sentence paradigms. The N400 amplitude differences between control and incongruous conditions, as well as amplitude means, appear to be larger in younger children (Juottonen, Revonsuo & Lang 1996; Holcomb et al., 1992). The N400 can also be delayed (Juottonen et al., 1996), longer lasting (Hahne et al., 2004) and have wider or different scalp distributions than that which is observed in adults (Hahne et al., 2004; Juottonen et al., 1996; Holcomb et al., 1992). In the written modality, Holcomb et al. (1992) elicited the N400 for *Kids learn to read and write in !finger/school*, in the youngest group able to read (i.e., 7-8 years-old).

Morphosyntactic ERPs have also been studied in children. When grammatically incorrect sentences are presented, a late P600-like positivity is observed in children aged 3 and older but early negativities (LANs or bilateral ANs) tend to take longer to emerge, possibly being preceded by sustained and often anterior positivities. Silva-Pereyra and colleagues (2005) presented children 3 and 4 years old with sentences in which there was a clash between the auxiliary and the verb (*My uncle will *watching the movie*). In 3-year-olds, children produced a continuous, widely distributed, and sustained positivity to ungrammatical structures, lasting between 200 and 1000 ms.

In a study of French-speaking children aged 4 to 9 using visual-auditory stimuli involving determiner gender agreement errors (e.g., *Je vois *une/un soulier brun sur la table* 'I see *a.f brown.m shoe.m on the table'), Courteau et al. (2013) observed both a sustained frontal positivity and a later P600 to gender agreement errors. The later P600 is similar to that found in adult speakers, but the early frontal positivity showed the opposite polarity than that found in adults (Gascon, Lebel, Royle, Drury & Steinhauer, 2011). In an auditory study of English-speaking children aged 8 to 13-years-old, a biphasic wave pattern with latencies similar to the adult LAN/P600 was found for sentences with agreement violations (*Where *do a boy like to play?*, Atchley et al., 2006). However, these data remain difficult to interpret for the methodological reasons discussed above. In her unpublished dissertation on agreement

⁸¹ Note that these sentences are problematic, as the incongruity could appear at 'like', unless 'like' is taken to be an adjective, which would create other data interpretation difficulties. This is another problem with the Atchley et al. (2006) stimuli, as many of the sentences used contain this specific lexical item.

violations in 14- to 17-year-olds and young adults (19-23 years-old), with auditory sentences such as *Everyday, the musicians *tunes their instrument*, Meier (2008) observed late P600s, from 900 to 1400 ms in the teenagers' ERPs, while the adults' P600s occurred in the 700-1500 ms time-range. An anterior negativity found in adolescents was unreliable and none was observed in adults. However, an additional N400-like negativity was found in adolescents. This, along with the aforementioned studies, seems to indicate a developmental pattern towards a decrease in component latency and increased focalization as the child matures and less reliable effects for ANs than for the P600s. In addition, (L)ANs might change in polarity over the course of maturation. This polarity instability is observed in mismatch negativities (MMNs), termed mismatched responses (MMR) in child research, due to their instability in infants (see e.g., Morr, Shafer, Kreuzer & Kurzberg, 2002; Trainor, McFadden, Hodgson, Darragh, Barlow, Matsos & Sonnadara, 2003), and might also become more lateralized, although there is not yet any evidence for this. These data illustrate why it is important to take into account age/maturation effects in groups with wide age ranges.

In a study of case marking in German a similar pattern was identified in 4-year-olds, with a more focal distribution on central and right lateralized sites. Schipke, Friederici and Oberecker (2011) observed a positive-going wave in young German children (3-, 4-and-a-half and 6-years-old) during the auditory presentation of sentences with double-nominatives (e.g., *Der Tiger küsst *der/den Frosch* 'The-Nom tiger kisses the-Nom frog')⁸², a thematic error in German that elicits N400/P600 waves in adults (Frisch & Schlesewsky, 2005). ERPs for the three age groups were characterized first by a broadly distributed frontal negative-going wave between 300 and 700 ms after stimulus presentation. The negativity was followed by a late P600-like positive wave. This biphasic pattern was similar to the N400/P600 present in adult ERPs in equivalent conditions (Frisch & Schlesewsky, 2005), considering that N400s tend to be more broadly distributed in children than adults. However, in the same study, double-accusative violations (e.g., *Den Tiger küsst *den/der Frosch* 'The-Acc tiger kisses the-Acc frog')⁸³ do not elicit the adult-like pattern, but rather an early positivity in the youngest group, a late negativity in the 4-and-a-half year old group and a two negativities in the in the 6 year-olds (between 600–800 ms and 1300–1600 ms). The authors link ERP patterns in the double accusative condition to processing difficulties with accusative case due to its later acquisition. It thus appears that the N400/P600 complex can emerge in children, but depends on the structures studied, and most probably, the child's mastery of said structures.

Clahsen, Lück and Hahne (2007), observe no positivity similar to the P600 in younger children (aged 6 to 7 years) when they are presented with plural overregularization errors in German (e.g., *Ein Kran belädt die grossen *Waggonen/Waggons im Hafen* 'A crane is loading the large wagons in the harbour'). A broadly distributed N400-like negativity is observed for these errors until the age of 8 when a biphasic wave — a negativity in anterior sites followed by a late P600 in the occipital region at 1000 ms — is seen. By the ages of 11 to 12 year old, a biphasic LAN/P600 pattern similar in distribution to adults is found, but with a longer latency in the P600. It thus appears, that ERPs for different types of errors within the same language (here overregularization versus case-marking errors in German) might show different emergence and refinement patterns.

⁸² Nominative case denotes subjects in German. The direct object of the verb should be in the accusative case.

⁸³ Accusative case denotes direct objects in German. One of the nouns should bear nominative case for subjecthood.

Syntactic ERPs have been sparsely researched in children. In the study by Atchley et al. (2006) discussed above, the condition with auxiliary drop (*Where *Ø a boy like to play?*) was used to study syntactic processing. This condition results in a biphasic pattern similar to that for morphosyntactic errors, i.e., a LAN/P600 complex in English children aged 8 to 13. Using a word deletion paradigm (e.g., *Die Gans wurde im Ø *gefütert* 'the goose was in-the fed'), Hahne, Eckstein and Friederici (2004) studied syntactic processing in German speaking children aged 6 to 13. All the groups except the six year olds showed the ELAN/P600 complex to ungrammatical structures, with older children showing earlier onset of the P600, similar to adults. The six-year-old group also showed a small P600, but this was preceded by an early positivity. However a previous study by Oberecker, Friedrich and Friederici (2005) observed a delayed ELAN in two-year-olds. Similarly to the data for morphosyntactic processing, these studies seem to indicate a process of maturation for syntactic processes, with late positivities emerging at young ages and showing earlier latencies with advancing age, while early negativities appear only around or after age 6. However, for methodological reasons discussed previously (mainly baseline correction problems, but in the case of Atchley et al. (2006) the additional absence of group comparisons), these data remain inconclusive.

Based on this short review, it appears that, at very young ages, children and adults show globally similar ERP components for lexical-semantic but not morphosyntactic and syntactic processing. Adult-like morphosyntactic and syntactic ERPs seem to emerge at different ages depending on the structures studied and the input modality (auditory or written). At the present time, it is unclear which morphosyntactic abilities mature earlier than others, as tasks on different grammatical processing domains (verb agreement, gender agreement, case and plural marking) have been undertaken in different languages. It could also be that the same linguistic process (e.g., agreement) matures at various time points in different languages, simply due to the variety in complexity, structures, or idiosyncrasy of the processes involved. However, the use of ERPs to study child language development is clearly motivated by the fact that some of the innovative studies presented above have provided data that shows, on the one hand, that ERPs can reflect lexical-semantic, morphosyntactic and syntactic processing in children, and on the other hand, that ERPs are sensitive to changes in the neurocognitive mechanisms underlying these processes. Based on these facts, we can extend the study of neurolinguistic processing using ERPs to children with SLI, in order to better understand the cognitive processes underlying their language difficulties.

If children with SLI replicate patterns found in unimpaired children we would expect to observe N400s on lexical-semantic violations at very young ages, while morphosyntactic, thematic role, and syntactic errors would show developmental trends on LAN/P600, N400/P600 and ELAN/P600 components, similar to their unimpaired peers. However, if children with SLI use different cognitive processes to acquire and process language, we would expect ungrammatical and semantically incongruous structures to elicit a number of diverging patterns. Based on the theories of SLI outlined above, we could expect children with language learning disorders to present one of the following patterns.

- 1) If children with SLI manifest general slowing in processing but normal patterns in their linguistic development, they should show normal ERP patterns with longer onset and offset latencies than unimpaired children. A possible outcome is that the timing of ERP

components should be slower. Another is that slowing in early components could block later ones from emerging.⁸⁴

- 2) If children with SLI manifest a delay in acquisition but normal pattern in their linguistic development, they should show similar ERP patterns but at later ages than those observed in unimpaired children. That is, their ERP signatures should be ‘immature’ as compared to age-matched peers, but similar to younger controls.
- 3) If children with SLI manifest deviance or difference in their linguistic development, they should show different or deviant ERP patterns from controls at all ages. These different patterns would signal the use of compensatory or alternative cognitive mechanisms for language processing.

Note that it is possible that children show one of these patterns in one specific linguistic domain (say lexical-semantic processing), but a different pattern in another (for example morphosyntactic processing). ERPs can allow us to tease these apart. It therefore seems that ERPs are a useful tool for the study of language processing in children with SLI, as we would expect processing difficulties to be reflected in their ERP components. Bearing this in mind, we now present a review of ERP studies involving children with SLI that focus on the domains of lexical-semantic, morphosyntactic and syntactic processing. We will present the studies and results by linguistic domain, as some issues with methodology and data interpretation are relevant only to certain paradigms.

ERP STUDIES INVOLVING CHILDREN WITH SLI

Lexical-Semantic Processing in SLI

Available evidence on lexical-semantic processing of isolated nouns or within sentences tends to show a developmental pattern whereby younger children with SLI (or at risk for language impairment) show reduced N400s for lexical-semantic anomalies or other lexical-semantic incongruencies, while older adolescents show pattern normalization. A number of the studies reviewed here compare lexical-semantic to syntactic or morpho-syntactic processing in children with SLI. In this section we refer only to data on lexical-semantic processing and will return to other aspects of grammatical processing in the following sections.

Friedrich and Friederici (2006) investigated lexical-semantic processing in very young children with and without a risk for language impairment. They observed that the absence of an N400 at 19 months was a predictor of weaker language abilities at 30 months. They selected forty children from a previous study (Friedrich & Friederici, 2004) who had been further evaluated on expressive and comprehensive language abilities at a later age (30 months). Two groups of children were established, with one ($n = 18$) being at risk for language delay. Retrospective analyses of the ERP components obtained at 19 months show a strong and broadly distributed early positive component (starting at 150 ms) to lexical-semantic incongruencies in the at-risk group, while the second group showed a typical N400

⁸⁴ This would be a cascade effect in the ERPs whereby an early process (say phonological encoding) is slowed down, causing a later one (say morphosyntax) to be slower to unfold, or even causing it to be unable to operate.

preceded by a small early frontal positivity. According to these authors, the absence of an N400 at 19 months would predict language delay or language impairment. Sadly, no follow up study was undertaken to establish the existence of language impairment in the at-risk children at later ages.

Older children with a confirmed diagnosis of SLI show longer latencies for the lexical-semantic N400, as compared to controls. Cummings and Čeponienė (2010) presented bimodal stimuli to 16 children with SLI aged 7-15 years. Using visual-auditory presentation of images (e.g., ROOSTER) with verbs (the lexical condition, e.g., *crowing*) or environmental sounds (e.g., a rooster crowing)⁸⁵ they observed that children with SLI show longer latencies on the N400 to lexical incongruencies as compared to controls, whereas both groups show similar latencies on environmental sound N400s. Because these effects are not found with environmental sound-word pairings in children with SLI, the authors conclude that the observed integration difficulties are specific to the lexical-semantic domain. However, these data are not strongly supported by the statistical analyses on group effects and interactions with stimuli types (differences between environmental sounds and lexical N400s were about 27 ms longer in the SLI group, but amplitudes and distributions were astonishingly similar, as can be seen in their ERP waves).

Studies of lexical-semantic processing in older children tend to find differences between children with SLI and their peers at relatively younger ages but not older ones. Sabisch, Hahne, Glass, von Suchodoletz and Friederici (2006), do not observe any (late or early) N400s to lexical-semantic anomalies in sentences containing incongruous verbs (e.g., *!Der Vulkan/Das Brot wurde gegessen*, 'The volcano/bread was eaten') in 16 German children with SLI aged 9-and-a-half on average. N400 amplitudes were also correlated with verbal short-term memory measures. However both children with SLI and controls show similar later P600s to these same errors. Sabisch and colleagues interpret the differences in the N400s as an indication of difficult lexical integration for verbs in SLI children. However, the additional computation linked to passive structures used in this study, and known to be difficult for children with SLI (van der Lely, 2005), could also have played a role. In her unpublished dissertation, Betz (2005) studied preteens (aged 11-13) and teenagers with SLI (aged 13-14) as well as teenager and adult controls, on lexical-semantic processing of sentences from Atchley et al. (2006), that is sentences of the type *Where does a !chair/boy like to play?*⁸⁶ Because the younger SLI group made unstable grammaticality judgments, only the older group was included in statistical analyses. All groups showed a relative negativity to semantic incongruencies, with no significant interactions between groups. Fonteneau and van der Lely (2008) studied lexical-semantic processing in teenagers and adults (aged 10-21 years) with G-SLI (Grammatical SLI, a subgroup of patients with difficulties specific to grammar processing, van der Lely, 2005) compared to language matched, aged-matched and adult controls. Sentences containing semantic anomalies (e.g., *Barbie bakes the !people/bread in the kitchen*) resulted in similar N400 patterns in all groups, with slightly different scalp distributions (more right lateralized) in younger language matched-controls. Weber-Fox, Leonard, Wray, and Tomblin (2010) studied lexical-semantic processing in teenagers with SLI and controls (aged 14-18), using sentences such as *Every day, the children !rust/pre tend*

⁸⁵ Note that the items were not matched across lists for length either in terms of "syllables" or duration.

⁸⁶ See footnote 5.

to be super-heroes. No statistical difference was observed between participant groups on the N400 elicited by the semantically anomalous verb.

In the written modality, similar data are found. An early study of visual sentence processing by Neville, Coffey, Holcomb, and Tallal (1993) investigated sentence final incongruous nouns (e.g., *Giraffes have long !scissors/necks*) in nine-year old children with SLI and concurrent reading disorders, as compared to age-matched controls. Both groups showed the N400 for anomalous sentences with a tendency toward larger and more delayed components for the SLI group. Only the delay difference was significant in the between-group analyses. Another set of data from this same study shows that children with SLI showed larger N400s than controls to both open and closed class words. Finally, in a series of recent unpublished studies of visual lexical decision on single words using ERPs, Sizemore and colleagues show that English-speaking adolescents with SLI (aged 15 years) are less sensitive to word frequency than controls: that is they do not show modulation of the N400 by frequency (Sizemore, Evans & Hughes, 2009)⁸⁷. In addition, in the SLI group, N400 effects might be correlated with non-word repetition abilities and receptive and expressive vocabulary scores, while it correlates only with receptive vocabulary scores in controls (Sizemore & Evans 2012). Unfortunately, these conference presentations have not yet been published as complete studies, and are difficult to evaluate in their present form. The majority of studies on lexical-semantic processing thus argue for a delay-with-normalization picture for the development of lexical-semantic processing in SLI. However, more subtle difficulties in lexical-semantic processing might still be present, as signaled by Sizemore's research.

Morphosyntactic Processing in SLI

Based on a limited set of experiments on morphosyntactic processing in SLI, it appears that ERPs might differ in children with SLI as compared to their peers. However, the available data is contradictory. Betz (2005) studied ERP responses to agreement errors (e.g., *Where *do a boy like to play?*, from Atchley et al., 2006) in teenagers 15-16 years old. While adults show a P600-like positivity to these "errors", none of the adolescents (SLI or control) show significant effects. However, the SLI group does show a trend, with an observable P600 in one parietal electrode (Pz). Again, for methodological reasons we discussed above, these data are inconclusive. More recently, Weber-Fox, Leonard, Wray, and Tomblin (2010) studied subject-verb agreement processing in teenagers with SLI (e.g., *Every day, the children *pretends/pretend to be super-heroes*). They observe a right anterior negativity (RAN) in both control and SLI groups, and a reduced P600 in the SLI group as compared to controls. This astonishing (and counter-intuitive) piece of data could be interpreted as meaning that automatic feature checking (as indexed by RANs) is intact, but that later integration and reanalysis processes (as indexed by reduced P600s) are impaired in SLI. To sum up, the studies reviewed show reduced or absent P600s to verb agreement errors in adolescents with SLI as compared to controls, but the Weber-Fox group also shows robust early negativities

⁸⁷ See Kutas & Federmeier (2011) for a review of N400 modulation by different factors including lexical status and frequency.

which are usually interpreted as automatic detection of grammatical errors. The data thus seems to support, in part, deviance or difference⁸⁸ in processing abilities in children with SLI.

Syntactic Processing in SLI

As with morposyntactic studies, the data on syntactic processing in SLI is still quite tenuous, because only a small number of ERP studies have probed these questions in children and adolescents with SLI, and most suffer from baseline correction issues. Many studies presented here were discussed in the above section on semantic processing, where information on age groups and controls is provided. Betz (2005), used *do*-omission structures from Atchley et al. (2006, e.g., *Where *Ø a boy like to play?*) to study syntactic processing in her teenage groups. All participants show a P600 to these “errors” with a later onset, larger amplitude and broader scalp distribution for the teenaged SLI group, which the author interprets as indicating later component maturation in SLI. Fonteneau and van der Lely (2008) studied syntactic processing in their four groups using sentences such as: *Who did Barbie push the clown into the *wall?* (as compared to *What did Barbie push the clown into?*)⁸⁹. They found group differences in the ERP patterns to ungrammatical structures, with LAN/P600 complexes in all participants except the G-SLI one, which showed a P600 followed by a late negativity. However, these data are astonishing, as the stimuli used should have elicited thematic-role N400/P600 biphasic waves (e.g., Friederici & Frisch, 2000; Frisch & Schlesewsky, 2005) rather than the ELAN/P600 complex. Moreover, at the point where the data are analyzed (i.e., *clown*) the sentences were not yet ungrammatical (consider *Who did Barbie push the clown into?*).

In addition to their study of lexical-semantic processing, Sabisch and colleagues (2009) probed sensitivity to syntactic errors to word-category violations in German children. In their syntactic condition (e.g., *Der Stock wurde ins *geworfen*, ‘The stick was in-the *thrown’, in comparison to *Der Stein wurde ins Wasser geworfen* ‘The Stone was in the water thrown’), results showed a biphasic pattern linked to syntactic structural errors (ELAN/P600, with the AN being in fact bilateral and sustained over 1500 ms) in typical children, while the group with SLI showed a reduced LAN becoming significant between 700 to 1000 ms, followed by a P600. The second component was more largely distributed over the scalp, as well as having longer onset and offset latencies, than in controls. However, differences between groups on both components are not strongly supported by the statistical analyses, as interactions with group were either marginal or not present in certain contrasts. Again, for methodological reasons discussed at the beginning of this chapter (mainly ERP baseline correction problems, but also the fact that these structures are not properly ungrammatical, e.g., one could say *Der Stock wurde ins geworfen wirkende Stroh befördert*. ‘The stick was in-the apparently thrown

⁸⁸ Since a majority of studies indicate that younger children tend to show similar, more distributed, or larger P600s than adults, smaller P600s are not interpreted here as a delay in language development abilities. However, further research might modify this picture.

⁸⁹ It is not clear whether the authors directly compared these two conditions, because they were in two different lists, and each participant heard only one list. Within the list, the control sentence was *Who did Alice in Wonderland push the ball into?*, which poses problems, as the subject noun phrases differ significantly in length (and most probably in frequency) in the two sentences, and might have an effect on the downstream ERP (including the baseline). In addition the design compares two different target words, where frequency, animacy and other factors might also influence ERP responses.

straw moved', and possibly, interference from prosodic effects due to splicing, Steinhauer & Drury, 2012), these data remain inconclusive.

In a study of grammatical subject and object Wh-question processing (e.g., *Who_i t_i kissed the hippo?* and *Who_i did the hippo kiss t_i?*)⁹⁰ in 13 English-speaking children with SLI and 17 controls with an average age of 9, as well as 18 adults, Tropper, Hestvik, Shafer and Schwartz (2008) expected to show reduced sustained anterior negativities to object questions in children with SLI. These sustained negativities are linked to increased memory load in complex sentence structure processing (see e.g., Ruchkin, Johnson, Grafman, Canoune & Ritter, 1992; Friederici et al., 1998). While adults showed sustained negativities to object questions, typical children exhibited sustained positivities, and children with SLI showed similar but reduced positivities. However, no statistically significant differences were found between the two groups of children. (In a concurrent offline task, SLI children were at chance when judging these sentences for grammaticality.) However, the authors did not control for working memory abilities in their participants, thus introducing a confound in their design. In the same experiment, sentences preceding the ones with Wh-questions (with filled gaps, such as 'the camel' in *The zebra that the hippo kissed *[the camel] on the nose ran far away.*⁹¹ as compared to adjunct structures like *The weekend that the hippo kissed [the camel] on the nose he ran far away*), were also presented to the children (Hestvik, Epstein, Shafer & Schwartz, submitted). Note, however that the filled-gap sentence is not ungrammatical at 'the' (consider *The zebra that the hippo kissed the other day...*). Control children elicit a bilateral AN at the filled gap between 0-200 ms and reappearing as a RAN at 500-600 ms, while children with SLI show late posterior negativities to this condition between 500-700 ms. The authors interpret this result as indicating a delay in grammatical processing in children with SLI. This interpretation does not consider the fact that the components in both groups are of a different nature (i.e., a posterior negativity in contrast to the RAN). If only a delay in processing was being observed, we would expect to observe the same types of components with different timing in both groups.

DISCUSSION

As mentioned above, lexical-semantic processing seems to show delay or difference in younger children with SLI, but also appears to normalize with age, at least in part. Because young children with SLI tend to have reduced vocabularies as compared to their peers, the data on word recognition for very young children is not astonishing. However, it also appears that older children with SLI can process lexical semantics in ways similar to their peers. The ability to process lexical items might be modulated by phonological processing or mnesic abilities in children with SLI (Sizemore et al, 2009; Sizemore & Evans, 2012). These data seem to indicate that if studies on lexical access in SLI factor in psycholinguistic properties that are known to correlate with language difficulties (for example, phonological,

⁹⁰ Indices indicate where the Wh-word has moved from in the underlying structure. Object questions such as *Who_i did the hippo kiss t_i* are known to cause processing difficulties typical in adults and children, and are hypothesised to be more difficult to process because of the long distance between the underlying syntactic position of the Wh-word and it's surface position.

⁹¹ Here the sentence is ungrammatical because 'the zebra' is the direct object of 'kissed', and the gap left by its movement to the head of the sentence cannot be filled with another complement, such as 'the camel'.

morphological or semantic knowledge) we could beneficially use relatively simple ERP paradigms for the study of SLI. For example, priming studies on lexical access are a traditional approach to these questions and could be a useful approach to the study of lexical access in SLI (see Royle, Jarema & Kehayia, 2002, for a classic priming study with teenagers and adults with SLI). A number of ERP studies have fruitfully adapted primed lexical decision to brain imaging (see, Royle Drury, Bourguignon & Steinhauer, 2012, and references therein). This approach would allow for a better understanding of specific difficulties in lexical processing in subgroups of children with SLI (e.g., children with phonological disorders, or semantic pragmatic difficulties). Note that research on word recognition has shown that, in gating tasks, children with SLI do not differ from controls when recognizing frequent real words but do so only when they are required to recognize non-words (Dollaghan, 1998; Montgomery, 1999). Dollaghan (1998) interprets this as showing that word comprehension difficulties in children with SLI are related to lexical status. At present, most ERP research on auditory processing in children with SLI has not focused on words but rather on segments (phonemes and syllables), in conjunction with ERP components that have not been reviewed here. Further studies are needed to improve our understanding of lexical processing in these children. Studies should also be aware that sentences such as *Giraffes have long !scissors/necks* can elicit phonological mismatch negativities (PMN) whether the task is written or oral (Connolly & Phillips, 1994; Newman, Connolly, Service & McIvor, 2003). The PMN is linked to the expectation that the sentence final word is 'neck' and the initial letter or phoneme (in 'scissors') mismatches this expectation. The PMN can overlap with the N400 in the ERP wave (Connolly & Phillips, 1994) and care must be taken not to confuse lexical-semantic processing difficulties with phonological ones.

There is still too few data on morphosyntactic processing using ERP techniques to positively conclude whether children with SLI show differences or delay in this type of processing. Interestingly, Weber-Fox et al. (2010) show apparently normal RANs followed by reduced P600s to subject-verb agreement errors. We could interpret these data as showing normal automatic agreement processing, but difficult controlled reanalysis and integration. Because only one study has presented interpretable data on the question, we must remain cautious with this explanation. However, processing of grammatical errors is a potentially rich area for research with children with SLI. Because these paradigms usually do not suffer from ERP baseline correction issues, their development should be straightforward in both written and auditory modalities.

One question the reader might ask is why do we observe P600 in morphosyntactic conditions that are not truly ungrammatical in teenagers with SLI (e.g., in Betz, 2005). As discussed in the introduction section, P600s can be elicited by hard-to process (e.g., passive) or garden path structures, as well as semantic incongruencies. Thus the appearance of a given ERP wave does not necessarily mean that we are measuring what we think we are, and these P600s could be linked to a number of other processing difficulties, which remain to be defined and studied.

Our review of the available studies of syntactic processing in children and teenagers with SLI leaves us with few interpretable data sets, mainly due to ERP baseline correction problems. It is clear that differences in processing are being revealed, but it is unclear what most of these studies are truly tapping. Data from Tropper et al. (2008) on Wh-questions could be interpreted as support for a hypothesis of syntactic processing difficulties in children with SLI, however, because they do not control for working memory abilities in their groups,

this interpretation remains tenuous. Thus, new avenues of research in syntactic processing for SLI, and for children in general, need to be refined and run for us to gain a better understanding of neurocognitive processes underlying syntax in children with and without SLI. In particular, paradigms that avoid baseline correction problems should be developed (Steinhauer & Drury, 2012).

CONCLUSION

In this chapter, we reviewed a number of innovative research using ERPs with children and showed that ERPs are a useful tool for the understanding of normal and impaired language processing in children and adolescents. We observed that research on lexical-semantic processing has provided some insights into language processing in children with SLI. The data seems to support a pattern of delay followed by normalization in lexical-semantic processing. However, research on morphosyntactic processing is lacking, and research on syntax is at present mostly uninterpretable. Promising avenues of research have been suggested. In particular, lexical-semantic (and lexical-phonological as well as lexical-morphological) processing can be studied using classic lexical decision, naming and priming tasks in conjunction with ERP methods. In addition, lexical-semantic processing within sentences, as has been undertaken with adults and a small number of children studies, is also a promising avenue. Furthermore, research on morphosyntactic processing can easily be developed, as paradigms already used in language acquisition research can be adapted to ERP techniques (e.g., Courteau et al., 2013), as long as one pays careful attention to avoid methodological issues outlined above. Syntactic processing is harder to study, because of the difficulties in developing balanced designs where ungrammatical and control conditions differ only at the critical onset of the structural error. However, this is not an impossible task and would certainly shed light on (dis)abilities in sentence processing in children with SLI. Another avenue of research is to study grammatical, rather than ungrammatical, sentence processing, as Tropper et al. (2008) do. In their study, grammatical structures (e.g., *Who_i t_i kissed the hippo?* and *Who_i did the hippo kiss t_i?*) are compared in terms of processing load. The development of this type of paradigm holds the potential to highlight similarities and differences in normal sentence processing in children with SLI.

However, future research must involve sound designs. There serious issues with psycholinguistic designs used in some of the existing experiments reviewed, either in terms of the stimuli themselves or in terms of identifying the point in time when the incongruity or ungrammaticality appears in the sound stream or the text, need to be addressed. A recurring problem when adapting traditional psycholinguistic sentence stimuli for ERP experiments is the question of when exactly a sentence becomes ungrammatical. When looking at the sentence from a dynamic versus a static perspective, it quickly becomes apparent that some structures can be ‘rescued’ (or are in fact not ungrammatical) where they are expected to be. This has to be taken into consideration when developing designs for the on-line study of language processing. Interdisciplinary ERP research should always involve teams including experienced ERP scientists, to avoid erroneous critical timing for data recording and artifactual data interpretation, as well as language professionals (linguists and

psycholinguists) to ensure that experimental designs are appropriate for the experimental questions addressed and the populations studied.

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Chapter 53

ANALYZING LANGUAGE USE OF LEARNERS WITH LEARNING DIFFICULTIES AND DISABILITIES WITH REGARD TO CHALLENGING BEHAVIOR

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ABSTRACT

Concerned about traditional practice with respect to challenging behaviors of learners with learning difficulties and disabilities (LLDD) in the UK, I questioned the extent to which they could manage themselves. From 265 LLDD, I invited 15 male learners, median age of 19, to participate in 12 weekly 1 hour discussions in sense-making groups specific to the challenging behavior of 3 case study LLDD who were drawn from the 15, as well as in 12 weekly 1 hour interviews that addressed behaviors recorded by practitioners (someone who works within a particular paradigm of care and education) as challenging. Thematic analysis yielded 5 themes related to different versions of LLDD either acting responsibly (handing their problems over to practitioners) or irresponsibly (deliberately disrupting learning and social environments), categorized as *I've got a problem, I told staff, I can't, I'm disabled* and *I'm not normal*. Discursive analysis highlighted 5 variable communicative and behavior patterns, *Conditioned-Response, Role Specific, Inner-Conflicted, Retreating* and *Higher Order*, which correlated with LLDD levels of differentiation from various adverse sources of influence on their identities. Despite these influences, when invited to engage non-defensively, LLDD proved able to manage themselves.

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INTRODUCTION

After accepting a post at a specialist college that promotes educational, vocational, personal and social development for learners with learning difficulties and disabilities (LLDD), I became conflicted when directed by my line-manager to manage their challenging behavior. I questioned, firstly, whether it was even ethical to position myself to engage LLDD on this basis. I questioned, secondly, the appropriateness of my professional worth being predicated on how LLDD conduct themselves in learning and social environments as such practice could compromise my professionalism, giving power, whether intentionally or not, to LLDD. I questioned, thirdly, why some practitioners generally accept LLDD cannot manage themselves.

Drawing on LLDD accounts from discussions in sense-making groups and 1-to-1 semi-structured interviews, this chapter highlights their capacity to organise, interpret and re-organise meanings they assign to their construction of challenging behaviour and, using a case study example, evidences the capacity of a LLDD to manage his challenging behaviour in learning and social environments. Considering the focus of this chapter, it is necessary to highlight current views on what challenging behaviour is and how it should be treated.

The literature illustrates one of the central contentions considered in this chapter; namely, the close and / or constitutive relationship between theory and practice and how these planes of influence converge to formalise learning disability narratives LLDD draw on to make sense of being in learning and social environments. Whilst this claim might generally be true, a short review of literature highlighted this in particular. Theory frames how certain practitioners view phenomena and this, in turn, influences how practitioners practice. Of course the relationship between theory and practice could be flexible, but practice is more interpretive and theory generally imposes certain limitations on practice.

An example of what is meant here could be found in a sociological perspective on blindness and / or any other disability as either might conclude the main problem is one of social isolation. Some practitioners, in response to this particular problem, might focus on reducing this isolation (e.g., better housing, transport links, education etc.). Other practitioners, those grounded in biological or medical understandings of the problem, might direct their practice toward improving sight via technical advances (e.g., implants). In reality, theories and practitioners who apply their understanding of them to situations like for example challenging behaviour, converge in a way that sustains their epistemological and ontological understanding. In this short section, this suggested link is illustrated principally from a psychological point of view.

In recent years there has been a plethora of literature around challenging behaviour that focuses primarily on how it is defined and how practitioners might respond to it when or if it occurs in learning and social environments. In this section, many of these views are critically discussed and evaluated within a theory of Social Role Valorisation framework (Wolfensberger, 1972 and Lemay, 1995). Closely linked to the principle of normalisation elaborated below, SRV is grounded in an assumption that society identifies groups of people as fundamentally different or 'abnormal'; such groups are implicitly viewed as being of less value than others in society; SRV also highlights methods used to facilitate this devaluation (Swain and French, 2008; Repper and Perkins, 2003 and Brown, 1973). Having established parameters for this critical discussion and evaluation, challenging behaviour has been defined

in a number of ways in the literature, yet, Emerson's seminal definition represents the standard:

"Cultural abnormal behaviour(s) of such intensity, frequency and / or duration that they endanger the physical safety of the student [my emphasis applied] or others is likely to be placed in serious jeopardy, or behaviour which is likely to seriously limit use of, or result in the person being denied access to, ordinary community facilities" (Emerson, 1995; p. 4).

First introduced in the United States by The Association for People with Severe Handicaps (Emerson, 1985; Emerson and Einfeld, 2011), challenging behaviour is deemed a descriptive term that is considered less stigmatising than more outdated labels commonly used prior to the 1980's (e.g., feeble-minded, sub-normal, abnormal, aberrant, disordered, disturbed, dysfunctional, maladaptive and problem behaviours). Emerson's definition, which includes four subject areas, is used to structure this review; namely, physical safety, cultural abnormality, limited use of services and potential of being cut-off from the wider community. Whilst most of this short review focuses on challenging behaviour as culturally abnormal, the issue of safety, limited access to resources and isolation from the wider community is explored first.

PHYSICAL SAFETY

Similar to historical events that aligned in a way that resulted in the mad being institutionalised (Arnold, 2008; Porter, 2002 and Shorter, 1997), the issue of physical safety shapes discourse on challenging behaviour because of a potential risk of injury to LLDD and / or others in various learning and social environments. Examples of these behaviours include violence toward others, self injury and reckless disregard for safety that could entail a LLDD wandering across the street.

When confronted with behaviours deemed to make learning difficult if not impossible, some practitioners might decide their duty of care necessitates restricting a LLDD's range of movement via physical restraint; whilst such actions could be helpful in certain situations, use of restraints is problematic for a number of reasons: this practice could result in injuries to practitioners and / or LLDD (Allen, D. et al., 2003; Blackburn, R. 2006; Bird, F. et al., 1989 and Hill and Spreat, 1987); unplanned restraints could lead to psychological stress for practitioners and LLDD (Emerson and Einfeld, 2011); Additionally, use of restraints in certain situations could be deemed unlawful or lead to various forms of abuse (Albrecht, 1992; Lyon, 1994 a and b). Inappropriate use of restraint could have result in an escalation in challenging behaviour (McDonnell, 2002); this type of practice might have been used in situations wherein other methods could have been more effective (Oliver, 1987) and use of restraint could have impeded on a LLDD's right to respect and dignity (Mental Capacity Act, 2005); yet, irrespective of these legitimate concerns, a reasonable argument could be made for use of restraints if LLDD's challenging behaviour represents a danger to themselves and / or others in learning and social environments.

Three broad categories of physical restraints appeared evidenced in the literature (Emerson, E. 2003): Direct physical contact between practitioners and LLDD; this could

include using manual guidance like holding a LLDD's hand to prevent movement and / or holding a LLDD's arms and legs to prevent h/her from attacking someone; use of barriers such as locked doors to limit freedom of movements; examples of this might include placing bolts / catches beyond the reach of LLDD and / or strategically locating physical objects and utilisation of material and / or equipment that could restrict or prevent movement of LLDD; examples of this might include strapping a learner into a wheel chair; requiring a learner to wear a helmet to reduce effects of head-banging and / or placing splints on a learner's arm to restrict h/her movement. Given potential for various forms of abuse, together with other concerns highlighted above, practitioners working with LLDD's whose challenging behaviours might warrant restraint, requires a formal policy that encourages sound judgments whenever such interventions are deemed necessary. A policy could establish clear parameters that specify minimum acceptable standards of good practice that could be grounded in a low arousal approach; the literature suggest this method is indicative of best practice (Allen, D., 2001 and McDonnell, 2009).

LIMITED ACCESS TO RESOURCES

Prior to the emergence of a critique of a 'top-down' social model of disability (Shakespeare and Watson, 1997; Barnes and Mercer, 2003), LLDD, under auspices of a medical model of disability (Emeron and Einfeld, 2011; Campbell and Oliver, 1996 and Foucault, 1977;), were diagnosed as biologically subnormal; as such, they represented an educational and social problem that results in them having limited access to resources generally available to normal members of society.

Many, because of their disability, cannot access resources such as schools, public transport or health services.

Initially confined to institutions such as workhouses and / or asylums, more modern methods of segregation include the establishment of special schools and colleges. Establishment of these institutions is dealt with more fully in the literature, but the idea that LLDD [my emphasis applied] are able to articulate their own needs rather than being fitted into social or medical models has been a claim, by disabled people, for greater access to resources including political power.

Nevertheless, challenging behaviour might result as a consequence of LLDD being socially and educationally isolated; this, of course, could also lead to even more limited access to resources in the community in which h/she lives.

LIMITED ACCESS TO COMMUNITY

Establishment of prisons and asylums in the 18th, 19th and 20th centuries to house criminals, mentally ill and feeble-minded is outlined elsewhere in the literature, but such institutions served to isolate these people from wider society (French et al., 1993 and Foucault, 1976). These actions were based on theories of contagion; it was thought mental illness could be spread through a population (Szasz, 1972 and Foucault, 1989). Viewed as not normal, LLDD [my emphasis applied] were driven out of local communities because they

were considered less productive and of less value than more able bodied people. Even with the rise of a more generous and benevolent outlook in more modern times, special schools illustrate a continuation of practice that limit LLDD access to the wider community; this, of course, could be understood in relation to the normalisation principle, initially, articulated by Bengt Nirje and further developed by Wolfensberger via the National Institute of Mental Retardation during the 70's (Nirje, 1969 and Wolfensberger, 1972). The aim of this principle is to make available to LLDD patterns and conditions of everyday living which approximated to regular circumstances and ways of life available to other members of society; specifically, housing, schooling, employment, exercise, recreation and freedom of choice (Nirje, 1969; Wolfensberger, 1972 and Emerson and Einfeld, 2011)).

Whilst this level of inclusion remains a lofty aim that informs recent disability policy in the United Kingdom (Disability Discrimination Act, 1995; Mental Capacity Act, 2005; Disability Discrimination Act, 2005 and Protection of Vulnerable Adults Act, 2000), continued use of labels like challenging behaviour could result in practitioners focusing on deficits and dyfunctions of LLDD; whether intentional or unintentional, this type of practice could result in their access to the community being prescribed and proscribed. Whilst debate over the value of 'special' schools versus a more integrated approach, where all, irrespective of disability, learn together continues today, the move towards inclusion has raised the professional profile of challenging behaviour.

CULTURALLY ABNORMAL

Practitioners in mental health and educational circles, following an introduction of a more inclusive approach to LLDD [my emphasis applied] as a group, to express concerns about a particular problem; namely, challenging behaviours (Emerson and Einfeld, 2011; Mansell Report, 2007; Emerson, 2003, 1987 and 1986 and Emerson et al. 1987); they worry learners formerly accustomed to more institutionalised settings might display culturally abnormal and / or disruptive behaviours in learning and social environments; thus, making learning difficult if not impossible for everyone (Arnold, 2002; Shorter, 1997; Porter, 2002 and Warnock, 1978).

Mechanisms and / or structures are formalised in response to potential disruptions and other dangers to ensure educational provisions are provided in specific ways (Warnock Report, 1978); certain practitioners, therefore, are taxed with responsibility for determining cognitive abilities and / or inabilities of learners whose behaviours and academic performance appears subnormal in comparison to normal learners. These practitioners are also responsible for devising ways of managing LLDD' compliance to educational and / or behavioural norms (Gravetter and Wallner, 2007; Gross, 2005; Wolverson, 2003; Cohen and Manion, 2002; 2000; Stapleton, 2001; Karzdin, 2000; Smith and Iwata, 1997 and Davis, 1997. Much of this work is based on the notion of challenging behaviour as an abnormal cognitive response; yet, this notion of challenging behaviour as irrational or abnormal is being challenged. Some authors see a need to deconstruct the notion of a Personal Deficiency Model (Oliver, 1990) wherein challenging behaviour is seen as abnormal or disordered behaviour and reconstruct the notion of a Social Theory of Disability (Shakespeare and Watson, 2002 and 1997). This alternative conceptualisation of disability discourse influences how challenging behaviour is

conceptualised by some in the literature. Szasz (1972), for example, suggest mental illness is a myth; Brown (1973) questions the objectivity of rationale assessments and suggest persons deemed 'sick' might be healthy afterall; Goffman (1976 and 1963) expanding on his *Asylum* work, offers insights into how individuals might present themselves in prescribed and proscribed ways when interfacing with those deemed to be in positions of authority over them; Edgerton (1993) even suggest that behind the Cloak of Incompetence are very capable individuals who might mask their abilities because it is expected of them; Hunt (1996) elaborates on this when discussing the experience of disability; Davis (1997) went further with his discussion of how normalcy is a construction and highlights the invention of a so-called disabled body; Oliver (1990) did a similar thing when considering the politics of disability.

These writers and others, like Potter (1998; 1996a; 1996b; and Potter and Wetherell, 1993), discuss versions of discursive psychology; their emphasis is on how people construct their realities, develop elaborate repertoires, devise scripts and put on performances that, via Call and Response, serve to keep certain constructions intact. In short, these writers highlight the possibility that disabilities and, by extension, challenging behaviour are merely constructions; hence, they could be deconstructed. These writers also suggest different meaning could be assigned to taken-for-granted knowledge; thus, challenging behaviour could have different meaning to different people in a wide range of socio-economic and cultural context. As such, it might be useful to gain insights into how LLDD make sense of their challenging behaviour.

This short literature review on challenging behaviour attempts to tease out the way in which certain theories of disability impact practice. A further attempt is made to demonstrate that whilst there might be genuine concerns about safety and access to resources and wider community for people who suffer from disabling conditions, the issue of challenging behaviour is far more complex when it comes to actual solutions. Although challenging behaviour is characterised as abnormal and / or irrational behaviour, this section demonstrates that solutions involve restraint, special programmes and low arousal environments; yet, there does not appear to be the same level of research in understanding this behaviour from the perspective of LLDD who have been deemed to challenge learning and social environments. Early authors such as Goffman (1981; 1976; 1963 and 1961) illustrates the performance aspect to social life. Others suggested challenging behaviour might be LLDD way of simply conforming to professional expectations (Potter and Wetherell, 1993). In fact, Shakespeare (1996) and others suggest that irrespective of what seems like extensive professional narratives on disability and challenging behaviour, it might be time to listen to how LLDD make sense of such behaviours; he recognised the importance of developing a bottom-up approach to services and care.

METHOD

Sample. Given the participation of a vulnerable population of adults, special University Research Ethics Committee approval was sought and attained prior to the study. From two-hundred and sixty-five students (55% females and 45% males), fifteen male LLDD participated at my invitation in twelve weekly, 1 hour discussions in sense-making groups.

Three of the fifteen LLDD also participated in twelve weekly, 1 hour, semi-structured case study interviews specific to their challenging behaviors. LLDD were invited on the basis of the following: signed consent form; eighteen and older; absence of timetable conflicts and minimally one-year enrolment in a behavioral sports therapy program that utilized martial arts to help LLDD increase their confidence (a program routinely in place at the college). Selection of LLDD was informed by the Mental Capacity Act (2005) and the Disability Discrimination Act (1995 and 2005); both required measures to ensure LLDD understood informed consent and their right to decline participation without prejudice.

Confidentiality and anonymity of data were assured through appropriate procedures. Accepting that discussions involving power could create anxiety, LLDD were scheduled to meet with counselors to discuss concerns and also had access to management, duty officers and a consulting psychologist.

Consent Forms. Informed by the Protection of Vulnerable Adults Act (POVA), potential benefits and possible risks were explained to LLDD. A letter explaining the study was sent to parents encouraging them to discuss the study at home. LLDD were helped to understand their right to withdraw without risk or penalties. Their right to refuse to give information or to seek clarification about the purpose of the study or its methods was clearly emphasized.

Interview structure. Through the normal course of their studies, LLDD were familiar with challenging behavior as defined by practitioners; namely disruptions to learning and social environments.

Taking care to disguise case study names, instances of actual challenging behaviors, taken from curriculum database sources, were introduced. Initial questions, designed to ascertain LLDD accounts, followed pattern below:

Opening:	1.	Tell us what you think is going on in this situation.
Introductory/ Positional Stance(s)	2.	Can you explain the position of each person in the situation?
Transition:	3.	What do you see as the problem in this situation?
	4.	How could the student have handled this situation differently?
Key Questions:	5.	What could defensive stances in social interaction mean? How could non-defensiveness on the part of student have changed the situation?
	6.	How could defensive stances affect the interaction?
	7.	What could be done to reduce behaviors deemed to disrupt the educational process?
Key Questions:	8.	How could non-defensiveness on the part of student have changed the situation?
	9.	Do you see any of these defensive behaviors occurring in the situation? If so, please explain.
Ending		
Questions:	10.	What suggestion (s) would you offer to improve the situation?

Duty-officer and residential logbooks were also collected; copies were made of recorded instances of case study LLDD challenging behaviors.

Data Analysis Methods. Analysis of LLDD accounts was informed by Benner (1985) who emphasized that everyday human events are temporal, historical and grounded in language and cultural practices, and hence cannot be objectified or reduced to cause and effect explanations. I, therefore, entered into a dialogue with transcripts by focusing on LLDD accounts. My initial interpretation involved systematic analysis of the whole text, before breaking it down into manageable parts. I then considered the whole as well as component parts, looking for any discrepancies, common features or patterns in the way LLDD talked about challenging behaviour. Interplay between the whole and its parts revealed additional questions and possible themes that enabled me to formulate new questions that informed the next round of discussion. I also drew on my personal reflections, interviews, observations, fieldnotes and journal to assist in formulating themes.

VALIDITY OF THEMES

In any qualitative study, the issue is not simply whether another researcher will discover the same themes or derive at the same or similar findings; instead, the focus is on whether findings are worthwhile (Lincoln and Guba, 1985), on whether findings, within the context of this chapter, reflect LLDD accounts (Baker et al., 1992).

Qualitative research criteria is concerned with truth, value, applicability, consistency and neutrality (Lincoln and Guba, 1985; Sandelowski, 1986). Validity, therefore, relates to the hermeneutic nature of understanding; I, the researcher, could only present my interpretations of LLDD accounts. I did not accept the object-subject dictonomy; I question the notion of letting the facts speak for themselves or of knowledge independent of interpretation (Benner, 1994).

Having analysed transcripts, I formulated the following emergent themes:

- I've got a problem
- I told Staff
- I can't
- I'm not normal
- I'm disabled

As I explored themes, I found Austin's (1981) suggestion that it is more constructive to consider the ways LLDD [my emphasis applied] account for freedom and constraint helpful, particularly given the practitioner/LLDD binary could lend itself to them using a type of Defensive Disability Language (DDL) to justify why they cannot manage themselves in learning and social environments. Although Austin (1961 and 1962) provides ideas about the language of *excuses*, I expanded this idea to include emergent themes that highlight how LLDD use DDL purposefully to account for why they cannot manage themselves when, in fact, they are capable of doing so. In the sample transcripts to follow pseudonyms have been used to safeguard LLDD identities.

TRANSCRIPTS OF FOCUS GROUPS

Group 1: Intimate Violence

- Interviewer:* What do you think is going on in this situation?
- Trevor:* He's got a problem; it's upsetting to him when she can't tell somebody. She gets her boyfriend to clean her mess up.
- Interviewer:* What is his situation?
- Trevor:* She wants him to clean her mess up.
- Interviewer:* What is her mess?
- Trevor:* She not able to tell lads not to touch her; she wants her boyfriend to do it.
- Interviewer:* Why can't she tell somebody?
- Trevor:* She can't; maybe she afraid or something.
- Tim:* Yeah, she's got a problem and she's afraid to express her feelings. She needs to tell staff instead of getting her boyfriend to sort it out.
- Interviewer:* Why can't she clean up her mess?
- Trevor:* She afraid too or something; she's not able to because something is wrong with her.
- Interviewer:* What do you think is wrong with her?
- Trevor:* Maybe her disability; some students have disability and can't do some things.
- Interviewer:* Why does she need to tell staff?
- Tim:* 'Cause staff can fix it.
- Interviewer:* Can she fix it?
- Tim:* Maybe not; she got a disability; she might can't do it.
- Interviewer:* What does having a disability mean?
- Tim:* She's not like other kids; she's not normal, so she needs help with certain things.
- Tom:* I think the problem is he's sorting out his own girlfriend's problems.
- Interviewer:* Could this situation be handled differently?
- Trevor:* She can tell staff instead of telling her boyfriend.
- Tim:* I think she should talk to her tutor.
- Tom:* She needs to stand up for herself; stop letting him hit her.
- Tony:* She needs to stop giving other lads the special look.

Transcripts of Case Study: Intimate Violence

Extracts from first, second and third interviews with a young man personally struggling with this same issue are provided below, with the aim of ascertaining how this participant could envision managing his challenging behavior.

First Interview with David

- David:* I feel [deep sigh] it's not my place; I feel overprotective sometimes.
- Interviewer:* Can you explain what that means for you?

- David:* It means, it [Shuffling in chair], I feel it's my responsibility to sort out the problems that she's having.
- Interviewer:* Why do you feel it's your responsibility?
- David:* Because, um, I'm her partner or boyfriend and, um, I like to look after her. And sometimes it gets me down, having to sort someone else's problem.
- Interviewer:* Why do you feel you need to sort out her situations?
- David:* Because I think she; I have talked to her and told her to do it herself, but she doesn't do it and I spoke to [assigned counselor] at lunch time and she said, "I think all girls like you to feel jealous or something." But, and um, she told me I have to stay on to [girlfriend] about sorting her own problems out; which I do, sir.
- Interviewer:* Why do you feel it's your place to sort out her situations?
- David:* Because if I don't do it nothing will get done [pause]. The problem keeps going on and on and on.
- Interviewer:* What is the situation again?
- David:* The problem is she doesn't like people touching her. And she can't say it. She can't say it to them herself and, um, she wants me to tell them not her.
- Interviewer:* How does it make you feel, her asking that you take on that responsibility?
- David:* It makes me feel good 'cause it makes me feel as though she's trusting me with information.

Second Interview with CS¹

- Interviewer:* What does it mean, 'being over protective'?
- David:* Taking control of, for instance, because [...], my girlfriend, I like to protect my girlfriend (pause); which I have been controlling, sir.
- Interviewer:* How does controlling her make you feel?
- David:* It makes me feel as though she needs me, sir; like I'm wanted.
- Interviewer:* What does her flirting look like?
- David:* She gives them a special look that she only gives to me; I can tell that she's flirting.
- Interviewer:* Is it possible that you misunderstand the look?
- David:* It is a possibility, yes, but it could be that she's given them the look; that's what's in my mind.
- Interviewer:* Do you have a special look when you see a woman you like?
- David:* Yes, I have [smirk] a certain look when I find other people attractive apart from my partner, but I'm faithful, and that means I'm not going out with anyone, um, but [...].
- Interviewer:* Do you find other people attractive?
- David:* Yes, it's human nature.
- Interviewer:* When you see her giving this special look how do you respond?
- David:* I snap and lose control.
- Interviewer:* What does "snap" look like?
- David:* You know, get mad, get angry, usually go outside and bang doors.
- Interviewer:* Is it possible to give the look a different meaning?

- David: Yeah [silence].
 Interviewer: In your mind, do you compare yourself to these guys she gives the look too.
 David: [surprised look] Yeah!
 Interviewer: Is it possible to change this pattern of comparing yourself to these guys?
 David: Yes, but I've got to make, um, I've got to feel good about myself.

Third Interview with CS¹

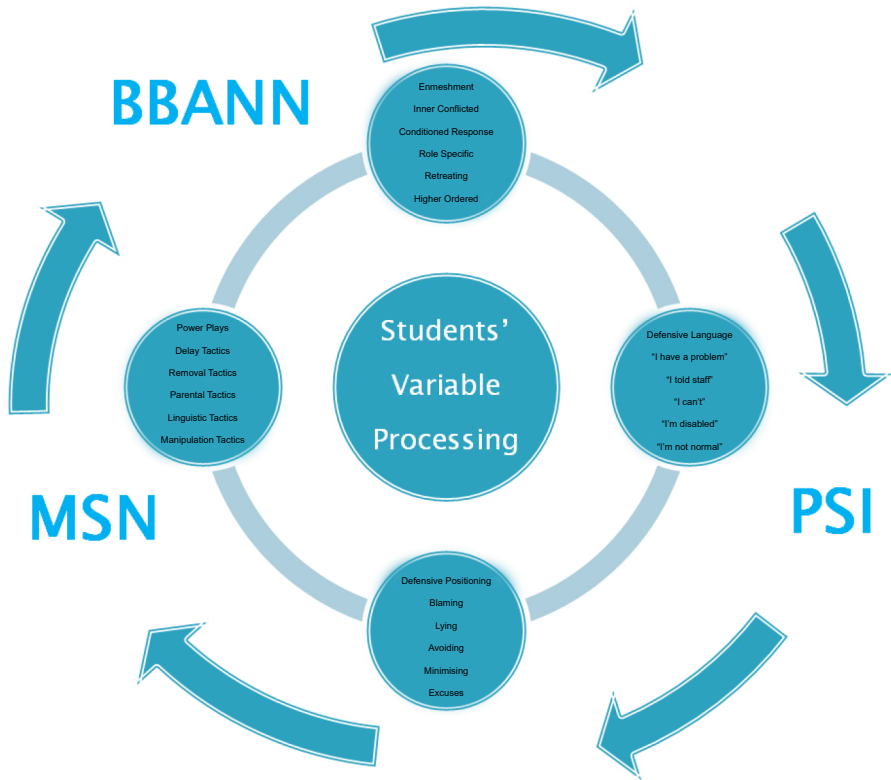
- David: At my previous school, my partners always cheated on me.
 Interviewer: Are you afraid the same thing will happen with your current girlfriend?
 David: Yes.
 Interviewer: Is it possible your current girlfriend won't cheat on you?
 David: Yes, she hasn't done so yet.
 Interviewer: Could your intimate violence be related to what happened in past relationships?
 David: Yes, I can see that this is happening.
 Interviewer: Is it possible to think differently about your current relationship?
 David: Yes, I would have to learn to trust [...].

IDENTIFYING DOMINANT NARRATIVES

David's willingness to reflect on his intimate violence was initially hampered by various defensive responses that entailed positioning to *avoid*; for example by suggesting his current partner had an issue with males touching her when, in fact, it made him uncomfortable. Consequently, he instructed her to disclose when this occurred. Over the course of interviews, he was able to recognize this as his power and control strategy (Jacobson and Gottman, 1998). He was, initially, unclear about how latent issues stemming from physical and emotional abuse experienced as a child and subsequent placement in foster care contributed to problem saturated relationship narratives; yet, having explored his use of power to solicit specific responses from his partner, he demonstrated a capacity to understand his basic conflict (Horney, 1972). Phrases like 'overprotective', 'my responsibility to sort out her problems' and because 'I'm her boyfriend' highlight linguistic patterns of power and control used by perpetrators (Murphy, C. and Eckhardt, C., 2005); yet with prompting David demonstrated he had a sense of his internal processing. He reflected on communication and behavior patterns in his relationship, explained meanings he assigned to his lived experiences and positioned himself accordingly having clung to patriarchal assumptions around gender roles. David appreciated that his partner's behavior was fear-based; a reaction to his intimate violence; this reflects a change in his self-awareness. He elaborated on my comments, rather than simply agreeing. Instead of focusing on his girlfriend, he accepted his intimate violence was predicated on being wounded in previous relationships (Horney, 1972).

**KEY FINDINGS FROM GROUP
DISCUSSIONS AND CASE STUDY INTERVIEWS**

LLDD view challenging behavior in ways that differ from practitioners. The latter view them as disruptions to learning and social environments; the former view certain behaviors, when operating on a conscious level excluding critical reflection, as resistance to traditional practices, wherein LLDD play the “Disability Game,” purposefully using Defensive Disability Language (DDL), Defensive Positional Stances (DPS) and Power Plays (PPs) to assert power over Practitioners (see Figure 1: Appendix 1).



Lee, 2011.

Figure 1. Students' variable processing.

VARIABLE PROCESSES OF LEARNING DISABILITY CULTURE

Responsible or irresponsible defensive communicative and behavioral patterns, when occurring consciously, but outside of critical awareness, represent one of several responses to traditional practice: Inner Conflicted, Conditioned, Role Specific, Retreating or Higher Order. Each of these variable processes is described in detail below.

Inner Conflicted and Conditioned Responses

At an unconscious level, some LLDD appear *Inner-Conflicted*; yet, they are unable to articulate their experience. They sense being normalized, disciplined and managed.

In response, a type of psychological splitting results and LLDD escape into a solitary inner-place to protect their identity. They also display *Conditioned Response* behaviors, acting in ways indicative of their label to solicit predictable responses in learning and social environments. When such responses operate outside of critical awareness, some LLDD display a version of acting responsibly by turning problems over to practitioners.

Yet, other LLDD, when acting consciously, deliberately disrupt routines of practitioners by refusing to cooperate with their interventions.

Still, they cannot, initially, articulate why they resist; nonetheless, their inner conflict and conditioned responses begin to follow predictable patterns.

Role Specific Responses

Other LLDD discover, as a result of repeated discursive engagements, that they can act without consequences in learning and social environments; they realize practitioners use elaborate and exculpatory explanations to account for their behavior.

They understand others engage with them on the basis of assigned labels and not their actual abilities; consequently, some LLDD discern their label gives them a type of power or permission to be deviant.

Retreating and Higher Order Responses

Retreating and *Higher Order* responses involve LLDD who have an awareness of defensive ways of experiencing.

Instead of conducting themselves accordingly, they interact in learning and social environments using newly formulated understandings of their identity; they draw on narratives that exceed assigned characteristics. Yet, when bombarded with Binary Branding Normalcy Normality (BBANN), Putative Social Identity (PSI) and Multidimensional Social Networks (MSN) influences, some LLDD become overwhelmed and *Retreat* to familiar territory, sacrificing the more self-regulatory possibilities they begin to envision and situate themselves once again in a dominant narrative of disability.

Alternatively, other LLDD, those differentiated enough to persevere, attain *Higher Order* challenging behavior; they have a sustained identity that is formulated via actual lived experiencing.

These LLDD are more able to identify their own role in processing problematic situations and responding sub-optimally, ultimately recognizing the possibility of greater choice and self-control in the future.

DEFENSIVE DISABILITY LANGUAGE, DEFENSIVE POSITIONAL STANCES AND POWER PLAYS

Denied self-management opportunities, LLDD engage in DDL having drawn from dominant narratives to inform their sense of being in learning and social environments.

Those operating variably internalize the belief they cannot manage themselves and position themselves accordingly; calling on practitioners to perform assigned roles. They follow prescribed and proscribed learning disability narratives (see Figure 1: Appendix 1) and, by way of inception learn to speak in specific ways, not realizing each statement has built-in assumptions about how LLDD view themselves.

Other LLDD, operating within variable processes, having attained a heightened level of awareness use Power Plays to achieve desired outcomes in learning and social environments.

LIMITATIONS OF STUDY

The overall results of this study reveal LLDD could engage in critical conversations specific to challenging behaviour and managing themselves responsibly; they could make sense of their lived experiences and, within variable processes, they do act responsibly when handing their problems over to practitioners and / or irresponsibly when using their learning disability label to achieve desired outcomes in learning and social environments. Results reveal LLDD view challenging behaviours in ways that differ from the sense practitioners make of it. The latter view these behaviours, in variable ways, as disruptions to learning and social environments; the former, however, view such behaviours as either acting responsibly and / or as resistance to traditional psycho-educational provisions that aim to normalise, discipline and / or manage their compliance to the status quo. Clearly these conflicting understandings might lend themselves to oppositional positioning; consequently, both might benefit from a shared understanding of challenging behaviour and a complementary methodological outlook when addressing this issue. Results further reveal LLDD, in response to a perceived power imbalance, play what is referred to in this chapter as the Disability Game; via variable processing they purposefully use DDL, DPS and PPs to assert their power over learning and social environments to achieve desired outcomes. This is relevant because an alternative provision could possibly assist LLDD and practitioners in understanding conditions that constitute variable communicative and behavioural responses that might be counterproductive to learning and social environments; behaviours that serve, whether intentional or not, to maintain the status quo.

Whilst generalizability of results is not the intended aim, findings might prove useful if practitioners account for the sense LLDD make of challenging behaviour and managing themselves; clearly, given the results of this study, any efforts on the part of practitioners to manage LLDD compliance might result in failure; alternatively, a provision grounded in the sense LLDD make of their behaviour might prove useful.

My role at college X made it impossible to be disengaged; therefore, it was necessary to highlight my hidden assumptions, values and beliefs before discussing how I mitigated against them during analysis.

Although LLDD came from different socio-economic backgrounds, findings in this study seem pertinent only to LLDD with similar characteristics (i.e., attend specialist college; median age of 19 and present with learning difficulties and physical disabilities).

Additionally, methods used to collect data over a twelve weeks period made it possible for LLDD to elaborate on their sense of challenging behavior; yet, in research terms, this is a short period of time. Moreover, there was no planned follow-up to determine if LLDD operated non-defensively following college; several researchers find non-defensive behaviors [my emphasis applied] decrease over time (Gulanick et al., 1998). Further to this, whilst LLDD provided invaluable insights; whilst their narratives contributed to an understanding of their variable processing, female accounts were altogether missing. Lastly, LLDD accounts enhanced credibility of this study but fifteen out of two-hundred and fifty LLDD indicates a need for a broader-based study that includes female LLDD.

RECOMMENDATIONS FOR FURTHER RESEARCH

In light of a shrinking economy, and given shortcomings of traditional practice, a longer, broad-based, in-depth qualitative study could expand our understanding of how LLDD make sense of challenging behavior; yet, a harsh reality remains, a new way forward is implausible unless practitioners face what is really challenging about challenging behaviors.

RECOMMENDATION FOR A NON-TRADITIONAL PSYCHO-EDUCATIONAL PROVISION

The principle aim of psycho-educational support could be to help LLDD increase levels of differentiation from their enmeshment, whether consciously or unconsciously, in BBANN, PSI and MSN influences.

By way of critical conversations that are framed in experiential / dialectical-constructivist understandings, a psycho-educational provision needs to be action-oriented; meaning, deliberately drawing on LLDD accounts to call into question taken-for-granted learning disability knowledge and traditional practice. Whilst engaging experientially / dialectically with LLDD around power relationships; normalising, disciplining and management influences and forces of hegemony and injustice, critical conversations during lessons, behavioural groups and 1-to-1 counselling (all curriculum-based) could be grounded in deconstructing commonly held learning disability norms, values and assumptions.

Working toward a shared aim of recovery from BBANN, PSI and MSN influences, curriculum-based psycho-educational work of psychologists / counsellors could be directed toward increasing LLDD awareness of being in the world independent of prescribed and proscribed narratives.

CONCLUSION

After assuming a post at the college, I was directed to manage the challenging behaviours of LLDD; yet, I envisioned my role as assisting them in acquiring skills to manage themselves. Given conflicting methodological outlooks, I sought to determine to what extent LLDD could organise, interpret and re-organise sense-making processes; could consider novel ways of conceptualising challenging behaviours and could use enactments to broaden non-defensive responses in learning and social environments.

I conducted an in-depth review of policy and the concept of learning disability to determine how challenging behaviour came to be defined. I examined literature with attention to the 1845 Lunacy Act; the Mental Capacity Act (1914); the 1944 Education Act and the Warnock Report (1978). I examined quantitative and qualitative approaches respectively; this resulted in a qualitative study that explored the everyday world of LLDD at the college using group discussions and case study interviews. The overall conclusion is that managing LLDD limits their potentiality and results in the emergence of their variable processing; LLDD acting responsibly or irresponsibly to assert power in learning and social environments. Alternatively, discourses grounded in LLDD managing themselves could be useful, suggesting several concrete professional practices that could enhance this goal.

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Chapter 54

INSPECTION TIME FOR VERBAL STIMULI: LETTER DETECTION, IDENTIFICATION, AND DISCRIMINATION SPEED

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ABSTRACT

Mental speed is defined as the speed at which neural processes are completed and it has been found that individual performance on speed measures significantly correlates with fluid intelligence scores. Given that traditional measures of mental speed use a discrimination judgment, the goal of this research was to expand upon the design of inspection time tasks, in which the exposure time for sensory stimuli is manipulated. In this study, mental speed was assessed using several novel inspection time measures that involved speeded letter detection and identification, along with letter-pair comparisons. The letter detection time task was considered to be the most basic measure of time needed to accurately perceive the presence of the stimulus, whereas letter identification requires the addition of verbal processes to label the stimulus. For each measure the time for the presentation duration of the target stimuli was varied from 80 to 16 milliseconds. In addition to the 3 inspection time tests, both fluid intelligence and working memory capacity were assessed. Fluid intelligence was assessed using a standardized visual reasoning test (Ravens), while working memory capacity was observed using a computerized complex span measure (Counting Span). Performance data for the inspection time tasks indicate that detection task was significantly easier, even under extreme time constraints for stimulus processing (16ms) in comparison to the letter identification and discrimination versions, in which accuracy dropped more drastically with decreasing inspection time. Correlational data revealed that all 3 speed measures predicted intelligence, however, only identification was related to working memory. Both mental speed and working memory capacity are significantly correlated with fluid intelligence, but each process makes a unique contribution to intelligence.

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The concept of mental speed was originated by Sir Frances Galton over a century ago, as an individual differences construct that contributes to variance in higher-order intellectual activities, such as reading comprehension or mental rotation. Galton considered this theoretical cognitive process of mental speed to be the result of the rate of neural firing in the brain, which may vary from one individual to the next. Those who need only a brief period of exposure time with a stimulus in order to make accurate decisions about it might perform better on a wide range of more complex intelligence assessments than those with slower neural firing. Galton's theory on mental speed and its relationship are presented in the first text book on psychology, *The Principles of Psychology* by William James (1890). In this chapter Galton claimed that fast neural firing would allow for better sensory discrimination, which could subsequently influence more complex decisions and judgments in other cognitive activities related to problem solving and reasoning. To expand upon this notion of mental speed, individuals who are fast information processors may be aware of briefly presented stimuli and perhaps better able to represent them in memory for later analysis in the context of reasoning. This theoretical process of mental speed has inspired further research of Spearman's (1904) theory of general intelligence (G), with fluid intelligence (G_F), or the ability one has to use primitive brain processing being comprised of mental speed, along with controlled attention/working memory as key components (Marshalek, Lohman, & Snow, 1983; Ackerman, Beier, & Boyle, 2002).

Currently, in the early 21st century, there are no direct measures or observations of this concept of mental speed. To date, neuroimaging techniques such as fMRI, PET, and ERP are not sensitive to such fast reactions of neural firing in the brain, and thus psychological science has resorted to clever designs with indirect cognitive assessments of mental speed. Some of the more widely used assessments are pen and paper format measures that involve letter, pattern, or number discrimination decisions that are performed under strict time constraints. Figure 1 provides some examples of speeded letter discrimination tasks (Salthouse & Babcock, 1991; Sheppard & Vernon, 2007). Tests such as these have 25 items on a page and require participants to decide if a given row consists of same or different letter strings, and the number of letters included in the strings varies from one example to the next. Responses are made by the participant writing in "S" for same and "D" for different on the line between the letter strings on a given row. Typically, there is a 1 minute time limit for the pen and paper versions. Newer computerized versions with a similar format are also currently in use (Reddick, Unsworth, Kelly, & Engle, 2012), in which letter string pairs are presented on a computer screen and reaction time can be measured for each item set. With this format, participants would see one pair of letter strings at a time and both accuracy and decision time can be observed.

Mental speed measures can be divided into several more specific categories of cognitive assessments of *reaction time* measures and *then inspection time* measures (Sheppard & Vernon, 2007). Each paradigm is emphasizing speed of processing information, however, reaction time tasks use a wide array of stimuli and decisions and include both simple and choice reaction time measures. These measures of reaction time may be considered to be observations of decision times for domain-specific stimuli, for example, tests like the Shepard and Metzler (1971) for mental imagery in which one must decide if two patterns are the same or different (however, when the same, the stimuli may be rotated at varying angles with more rotation leading to increase in reaction time). Such examples, along with the letter discrimination speed measure (Figure 1), require a series of cognitive processes leading to a

response regarding same/different. For both types of measures, participants must visually scan two areas of space, perhaps repeatedly scanning information and comparing, before making a decision. Such a comparison process requires the formation of an adequate representation of each in order to make an accurate decision. For both letter string discrimination and mental rotation, the dependent measure is the time between the presentation of the stimuli and the time at which the participant responds, usually by pressing a key to indicate a response.

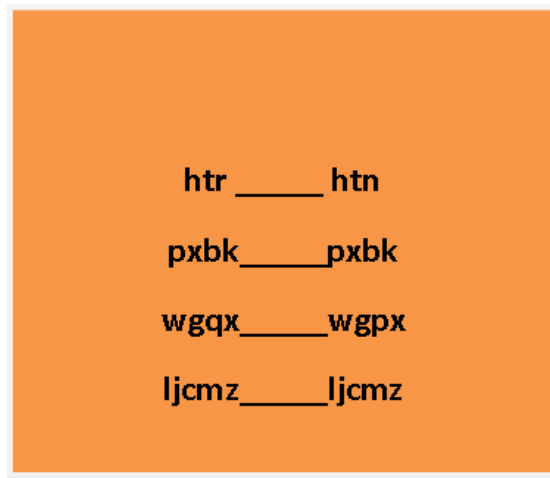


Figure 1. Example of standardized mental speed assessment in which participants must decide if letter strings of varying length are same or different with a strict time constraint. Quick information processors may complete these more rapidly and with less error.

Aside from general reaction time paradigms, mental processing speed is also assessed by the inspection time (IT) task paradigm, which involves varying the amount of exposure time to stimuli. Traditionally with these assessments, participants also make decisions about whether two stimuli are the same or not. This discrimination format between the reaction time and inspection time measures is commonly used and may be a direct tribute to Galton's *senses-intelligence hypothesis*, in which sensory discrimination is a process in which the timing is subject to individual differences which may contribute to intelligence. A recent extensive review of intelligence research from last 50 years, confirmed the significant correlations that exist between intelligence and traditional inspection time measures (Sheppard & Vernon, 2007). Findings generally reveal that inspection time performance correlates more strongly with fluid intelligence (i.e., mental skill) than crystallized intelligence (i.e., acquired cultural knowledge and domain-specific expertise) and that overall correlation is moderate, but very consistent across many different studies (Sheppard & Vernon, 2007).

The discrimination format of inspection time measures can also vary in design, with either a simultaneous stimulus display (for visual stimuli) or a successive stimulus display, as in the auditory inspection time task (Bates, 2005; Deary, 1994; 1995; Deary, Caryl, Egan, & Wight, 1989). In either case, a backward mask is used to limit the sensory persistence for stimuli. Thus, unlike general reaction time measures, inspection time tasks manipulate the amount of time one is exposed to information, or the duration allowed for "inspection". A

backward mask is a more complex stimulus that immediately follows a target stimulus to disrupt further sensation and perception. For visual stimuli, the mask must occur immediately and endure for 200-350 ms after the target to disrupt processing. Aside from the masking stimulus to control when processing stops, the amount of time the participant is provided with to observe is also limited and manipulated for comparison purposes (i.e., to observe the discrimination judgment with exposure times of 100 versus 50 milliseconds). The resulting observation is a measure of accuracy of processing, given the specified exposure duration.

To expand upon the current research on mental speed using inspection time tasks, the goal of this research is to compare test performance with a wider range of decisions – other than discrimination, such as detection and identification. Discrimination judgments used in traditional measures require comparison processes, which may rely on other primitive cognitive systems for attention and working memory. Therefore, the traditional tasks using discrimination decision may not be the most pure measures of inspection time/mental speed. In order to better understand mental speed measures, it would be useful to compare performance on measures with other decisions. Detection requires conscious perception of a visual stimulus, in this study, a letter. Presenting a letter with forward and backward masking stimuli for brief periods would provide a measure of how much time is necessary for an individual to merely see a verbal stimulus. This measure of processing time required for conscious letter detection would be akin to assessing the threshold for which a visual stimulus goes from liminal to subliminal, which could vary in individuals. Additionally, identification of that letter takes further cognitive processing by accessing areas related to the verbal labels for the stimulus, as well as the process of conscious detection. Inspection time for letter discrimination, with a simultaneous presentation of letter pairs will be compared with both detection and identification versions of the test.

Hypotheses regarding performance differences would be based on overall accuracy for the 3 different measures, however, it is also important to manipulate the exposure time for each for further comparison. Exposure (or stimulus duration) times in this study are minimal and range from 80 ms to 16 ms, which is the shortest duration one can present given current computer display refresh rates. This study uses a typical psychophysical design with descending staircase method with respect to the exposure times, with trials presented in blocks in which the stimulus duration decreases with each block. Since letter detection is the most basic decision, and may not rely on verbal processing, but perhaps general pattern perception, this task should yield higher accuracy with small exposure durations in comparison to more complex tasks, such as letter identification and discrimination. Since the later require additional processing, it is likely that more time would be needed for accurate decision making.

In addition to comparing the 3 inspection time measures, potential correlations with a standardized measure of fluid intelligence will also be observed. Since there is already evidence that inspection time with a discrimination judgment correlates with G_F , the letter discrimination inspection time task should correlate with intelligence, using the Raven Advanced Progressive Matrices test of figural reasoning (Raven, Raven, & Court, 1998). Although the letter detection and identification versions for inspection time are novel, if both are valid measures of neural firing speed, then according to theory, they should both correlate with IQ as well.

Another observation in this experiment is the potential correlation between the speed measures and working memory, which does not always correlated with speed measures

employing a discrimination design (Reddick, Unsworth, Kelly, & Engle, 2012). However, both have been found to correlate with intelligence (Ravens task), and thus it is possible to find evidence for either independent or interactive influences of working memory capacity and mental speed on fluid intelligence. Working memory capacity in this study was observed by a commonly used computerized complex span measure, the Counting Span task (Payne, Kalibatseva, & Jungers, 2009; Conway et al., 2005; Kane et al., 2004; Engle, 2002), which requires participants to engage in a difficult visual search while trying to remember a series of numbers.

This research combines experimental and correlational methods to better understand inspection time design and the relationship between mental speed, intelligence, and working memory. The importance of this study is the comparative understanding of decision processes in the design of basic cognitive tasks assessing mental speed. The results wield the potential to expand our understanding of what mental speed is, and at what point it relates to intellectual processes based on the additive cognitive functions required for each speed measure used. Currently the traditional discrimination versions have been found to correlate with fluid intelligence, and thus the novelty of this study is to examine potential relationship with inspection time for detection and identification with IQ. An additional benefit of exploring the various inspection time tasks is that the use of verbal stimuli makes these assessments potentially useful in related research on language processing and difficulties, and could be used in the understanding of written language abilities and learning to read.

METHOD

Participants

One hundred central Ohio community members volunteered to participate in this study (those who were between 18 to 45 years were eligible). Participants were recruited through informational flyers posted at Kenyon College, as well as an advertisement in the local newspaper. Volunteers either received credit for research participation in a psychology course if currently enrolled, or received monetary compensation. All participants had normal or corrected to normal vision and were native English speakers.

Materials

Visual Acuity Screening

After informed consent and volunteering basic demographic information, such as age and sex, each participant performed a visual acuity test using a standardized Snellen Eye chart to screen out any individuals with potential vision difficulties. This basic procedure requires individuals to read letters of varying sizes (line by line). Participants were informed to wear corrective eyewear for this assessment. All participants passed the visual acuity test screening with 20/20 vision.

Inspection Time for Letter Detection and Identification

This computerized performance measure required participants to identify letters appearing on the computer screen for increasingly shorter periods of time. There were 5 blocks of fifteen trials, each with the target letter appearing for shorter and shorter periods of time. The target letters were X, Z, H, K, and E, presented in size 18. The first block was an easy practice block where the target letter appeared for 500 msec. In the following blocks, the target letters were presented for 80, 50, 30, 20, and 16 msec. Five trials were “blank” trials in which the target letter did not appear. The other 10 contained a target letter. Each target letter was presented twice in a block.

Participants viewed a “Ready” screen that prepared them for the coming trial. They pressed the spacebar to initiate a trial. In each trial, there was first a pause of 500ms. Then a “#” sign was presented in size 18 font for 30 ms. Next the target letter did or did not appear. The target letter (or blank) was then be followed immediately by another “#” sign for 300ms. For each block, the participant viewed a random order of blank and target trials. Participants were then asked to indicate whether they saw a target letter or not by pressing either “1” for yes or “3” for no. They were next asked to indicate which letter they saw, if any, by pressing the respective key on the keyboard, or “3” again for no letter. The participants were then given feedback on whether they had picked the correct letter. This task was scored on two levels: accuracy for detection and identification, for each presentation duration block.

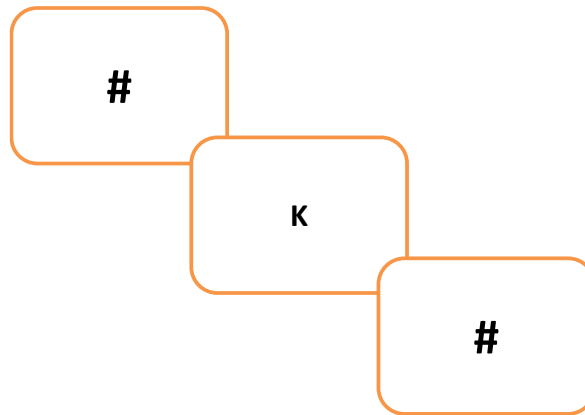


Figure 2. The series of rectangles represent the sequence of events occurring with the mental speed assessment for letter detection and identification. The participant first sees a “Ready” screen, and can initiate a trial at any point, allowing for self-pacing. Once the trial is initiated there is a 500 ms foreperiod followed by a 30 ms “#”, then the target stimulus (if a “present” trial), which remains for either 80, 50, 30, 20, or 16 ms. Next the backward mask appears for 300 ms. Afterward, an instruction screen asks, “Did you see a letter”, and the participant can respond by pressing designated keys for “yes” and “no”. If a letter was reportedly detected, the participant is asked to identify that letter by typing it on the computer keyboard.

Inspection Time for Letter Discrimination

This computerized task required participants to determine whether two letters presented as pairs on the computer screen for increasingly shorter periods of time were the same or different. There were blocks of fifteen trials, each with the target letter pairs appearing for shorter and shorter periods of time. The target letter pairs were XX, KX, EH, ZZ, or XK presented in size 18 font. The first block was an easy practice block where the target letter

pair appeared for 500 msec. In the following blocks, the target letter pairs were presented for 80, 50, 30, 20, and 16 msec. Each target letter pair was presented twice in a block.

Participants viewed a “Ready” screen that prepared them for the coming trial. They pressed the spacebar to continue on to the trial. In each trial, there was first a pause of 500ms. Then a “#” sign was presented in size 36 font for 30 ms. Next the target letter pair did or did not appear. The target letter pair was then followed by another “#” sign for 300ms. Participants were then asked to indicate whether the two letters in the target pair were the same or different by pressing either “1” for same or “3” for different. The participants were then given feedback on whether they had picked the correct response. This task was scored based on accuracy of discrimination for each presentation duration block. A series of task events in the experimental timeline are shown in Figure 2 for the letter detection and identification versions of the inspection time task. The discrimination version includes the same trial events, only with letter pairs (side by side, with no space between).

Counting Span Working Memory Task

This working memory capacity assessment involves controlled visual search while alternately updating a list of quantities counted to be remembered later. The version used for the current study has been used in previous research and was shown to have good reliability, with Chronbach’s $\alpha = .71$ to $.77$ (Payne, Kalibatseva, & Jungers, 2009; Kane et al., 2004). This measure was administered on a computer using E-prime 1.0 software. Participants were instructed to count the dark blue circles presented on a series of screen displays. Dark blue circles were surrounded by distractor items that shared colored and shape characteristics (dark blue squares, light blue circles). Once the participants counted the total number of targets on a screen aloud, they were instructed to repeat the final number, upon which the experimenter prompted the next screen of stimuli or a signal to recall the number of targets for that set of displays. The participants were unaware of how many item totals would have to be remembered during any given memory set trial. Memory sets contained 2 to 6 items, with 3 sets of each giving a total of 15 memory sets and 60 points possible. The measure was scored conservatively by adding up only the total number of sets for each participant with correctly completed recall that maintained the order of the items as they were presented on the computer display (Conway et al., 2005).

Raven’s Progressive Matrices Intelligence Assessment

For this pen and paper assessment, participants were presented with a pattern of eight black-and-white figures arranged in a 3 X 3 matrix with one cell missing. Figures ranged from simple geometrical shapes to complex textured patterns. Participants were required to select a figure out of eight options presented below the matrix that would best complete the overall pattern of the matrix, such that the rules of change apply accurately in both multiple directions of the figure matrix (vertical and horizontal). Following 2 practice items, participants were limited to 10 min to complete 18 test matrices that increased in difficulty, consistent with previous research (Kane et al., 2004). The items used in this shortened version consisted of the odd-numbered patterns from the RAPM Set II, and have been found to be internally consistent (Kane et al., 2004).

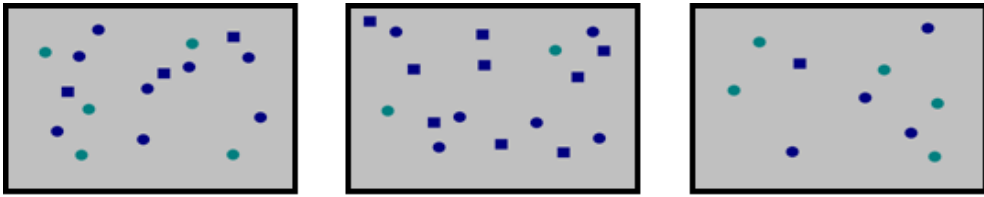


Figure 3. In the Counting Span Task, participants are asked to count the number of blue circles aloud and then remember that number after counting a number of screens (2 to 6). Examples of the stimuli are included here. Note that there are two types of distractors that share a conjunction of features (such as color or shape), to promote a controlled visual search process that requires focus, while trying to update and remember a list of targets counted.

Procedure

Participants were tested individually at the Kenyon College Cognition Lab. Upon completion of the demographic questionnaire and the visual acuity screening, each participant performed the computerized inspection time tasks in the context of a sound attenuated laboratory area. In order to promote equality in visual angle across individuals in the sample, for all 3 speed measures, participants sat in a stationary chair with the head 17 inches from the computer monitor and were instructed prior to task not to lean forward. After practice trials with the experimenter present, individuals were able to self-pace through the inspection time tasks on their own and could work independently without distraction. After completing the inspection time tasks, an experimenter administered the Counting Span Task, recording remembered items on a response sheet. For the Raven's task, participants worked on their own and recorded responses on paper. The entire experiment lasted between 45 min and 1 hour for individuals in this sample set. Each participant was compensated (with cash or credit for a course) immediately following the study. All participants were informed that they had the right to skip items on the demographic questionnaire and had the right to stop or skip any parts of the procedure however, all participants completed the study.

RESULTS

Descriptives

Participant Descriptives

Out of 100 community participants, 46% of the sample was comprised of males and 54% females. The majority of the sample were young adults with the mean age was 20.82 years old, with a standard deviation of 4.74. All participants were either working on obtaining a college bachelor's degree or had already achieved that accomplishment.

Performance Descriptives

Descriptive data for all measures used are listed in Table 1, which includes the 3 inspection time tasks, the counting span measure of working memory, and the Raven's test for intelligence. With all 3 inspection time assessments being on the same scale of accuracy

(using percentage correct), it is clear to see that the letter detection task is easier to perform and has a more limited range of scores in comparison to letter identification and discrimination.

Table 1. Descriptives for Performance Measures

Measures	M	SD	Range
1. Speeded Detection	.94	.07	.71-1
2. Speeded Identification	.72	.11	.51-.96
3. Speeded Discrimination	.74	.13	.52-1
4. Counting Span Task	30.24	13.42	6-60
5. Raven's Matrices	11.02	2.58	3-17

Inspection Time Tasks

Since the speeded letter detection version is the most basic in terms of theoretical processes involved, this task should have higher accuracy than the other more complex versions. Mean percentage accuracy on each inspection time task is shown in Figure 4, as a function of stimulus duration time (from 80 to 16 ms) with standard error bars. Using a 3x5 within-subjects factorial design (for task type by stimulus duration, results of a General Linear Model ANOVA revealed a significant main effect of task type, ($F(2,98) = 219.26, p < .001$) with detection yielding significantly higher accuracy overall.

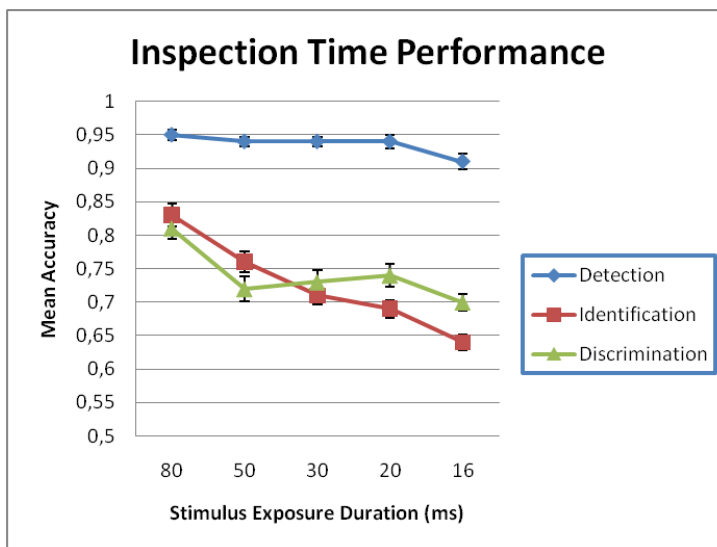


Figure 4. This graph shows the mean accuracy for all three versions of the letter inspection time tasks. Note the drastic difference between detection and the other tasks. Standard error bars are included to note differences between conditions.

Post hoc analysis data indicated no difference between overall accuracy on identification and discrimination ($p < .05$). As expected, there was a significant main effect of stimulus duration, with accuracy overall dropping with reduced presentation time ($F(8,92) = 14.37, p <$

.001). There was also a significant interaction between test type and stimulus duration on accuracy, ($F(4,96) = 34.00, p < .001$). For the letter detection task, there was only a significant drop in performance when the stimulus duration was reduced to 16 ms, as pairwise comparisons revealed a difference between accuracy at 20 and 16 ms durations, ($t(99) = 2.83, p = .006$). The letter identification and discrimination tasks showed very similar data patterns across durations, however they differed from one another at both the 20 ms condition ($t(99) = -2.82, p = .006$), and the 16 ms condition ($t(99) = -3.46, p = .001$), with the identification task having the lowest accuracy in both. There were also differences in the 50 ms conditions ($t(99) = -2.00, p < .05$), but identification is actually easier at this exposure duration. Lastly, there were no significant correlations with age and inspection time or sex differences ($p > .05$).

Table 2. Correlations among specific inspection time tasks, working memory capacity, and fluid intelligence

Measures	1	2	3	4	5
1. Speeded Detection	—				
2. Speeded Identification	.62**	—			
3. Speeded Discrimination	.31**	.44**	—		
4. Counting Span Task	.13	.17*	-.01	—	
5. Raven's Matrices	.29**	.41**	.25**	.36**	—

**Significant at .01, *Significant at .05.

Inspection Time, Working Memory, and Intelligence

The correlations between performance measures are provided in Table 2, (based on one-tailed tests). All of the inspection time assessments correlate with one another, as well as the Raven's test of intelligence. This relationship between letter inspection time and Raven's is stronger for the letter identification task ($r = .41$) in comparison to the other two speed measures. The counting span also correlates with the Raven test. Additionally, the counting span working memory task is correlated only with the letter identification version of inspection time, although the relationship is still fairly weak ($r = .17$). It is also important to note that overall speed, computed as an average score for the 3 inspection time measures, did not correlate with working memory ($r = .11, p = .30$). Overall speed did correlate significantly with the Raven's test ($r = .39$), indicating independent influences of speed and working memory on fluid intelligence (as shown in Figure 5). Multiple regression revealed that 26% of the variance in the intelligence measure was explained by speed and working memory ($R = .51, p < .001$), with both speed ($\beta = .32, t = 3.64, p < .001$) and working memory contributing significantly ($\beta = .36, t = 4.05, p < .001$).

Inspection Time Stimulus Durations and Intelligence

In order to observe when the relationship between speed of processing and intelligence occur, the correlations between mean percentage accuracy on each speed measure, specifically by the average for each set of stimulus presentation durations and the raven's performance were calculated. Correlations are listed in Table 3. For letter *detection*, performance accuracy correlates with Ravens significantly for all durations except the easiest 80 ms duration, which may indicate the ease of that condition in the task. For letter

identification, accuracy correlates with intelligence at all presentation durations. However, for the discrimination task, there is no correlation at 80 or 30 ms. The lack of relationship at 80 ms could plausibly be due to ceiling effects, however, the lack of correlation with 30 ms is more difficult to explain.

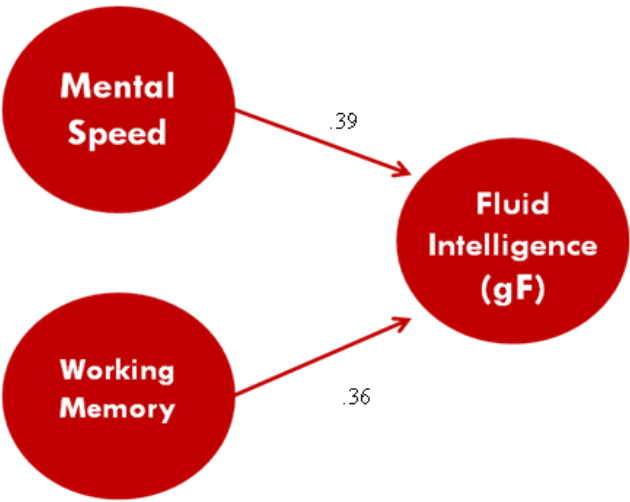


Figure 5. Both overall mental speed and working memory capacity have independent influences on performance on the fluid intelligence measure. First-order correlations are listed.

Table 3. Correlations between specific stimulus exposure conditions on the inspection time tasks with intelligence

Stimulus Exposure Duration	Detection	Identification	Discrimination
80 ms	.11	.26**	.13
50 ms	.22*	.33*	.24**
30 ms	.32**	.27**	.15
20 ms	.23*	.29**	.23**
16 ms	.24*	.32**	.19*

**Significant at .01, *Significant at .05.

DISCUSSION

The primary goal of the research was to expand understanding of the concept and thus the measurement of mental speed, by addition of letter detection and identification versions of inspection time assessments that have traditionally been designed around a discrimination paradigm. Since discrimination judgments rely on scanning and comparison processes, the creation of a more basic task, the letter detection version, may be the most primitive decision for inspection time possible using psychometric methods. By manipulating the amount of stimulus exposure time, direct comparisons can be made across tasks and between conditions so that it is possible to observe when difficulty and inaccuracies occur, and even which conditions may be predictive of intelligence.

With the comparison of accuracy across the three inspection time tasks, it is clear that letter detection is fairly easy and only drops at 16 ms, (although the drop is still a small percentage). Letter identification and discrimination are very similar, with the exception that they become statistically distinct with stimulus durations exposures of 20 and 16 ms. Letter identification becomes increasingly more difficult with brief exposures, whereas letter discrimination remains fairly steady with exposures of 30 ms and shorter.

These data document variation in young adult mental speed for 3 basic decisions with simple verbal stimuli, letters. For detection, the target information must be presented long enough for conscious visual perception. However, for the identification task, verbal processing must occur in order to label the stimulus, and potentially access to representations in memory. This additional language processing for identification, as well as theoretically, extra scanning for discrimination decisions about letters that are adjacent to one another requires more inspection time for an accurate decision in comparison to mere detection.

An application of these findings would apply in subliminal processing, and in marketing. If a stimulus is presented very briefly, with a more intense or complex visual mask (or another image) following rapidly to disrupt iconic persistence of the image, viewers will likely see it, since accuracy on detection (at least with one letter) was very high (above 90%). However, you will be less likely to be able to identify it or discriminate letters if the exposure time is 30-20 ms in duration.

The rate of neural firing or mental speed varies between individuals, and as this study indicates, that rate of firing is indicative of higher-order intellectual reasoning, as measured by the visual matrix test. This neural speed could possibly be the time needed for the brain to make an accurate, precise representation of stimuli. The precision needed may be dependent on the type of decision the information will be used for (identification or discrimination). The more complex the subsequent decision or processing is, perhaps the more detail may be needed. Without adequate time for an accurate representation of stimuli, more complex reasoning would subsequently be at detriment.

The letter inspection time tasks all show good convergent validity, as they inter-correlate significantly. They also have good predictive validity with all measures correlating with intelligence, as measured by figural reasoning (which is consistent with previous research; refer to Sheppard & Vernon (2007) for full review). Such findings provide support for a theory of general intelligence in which some basic processes, such as those used in the working memory system and mental speed are primitives of fluid intelligence and reasoning. Although overall speed did not correlate with working memory (consistent with Reddick et al., 2012), performance accuracy on the letter identification task did, although it was a weak correlation (.17). The relationship between the identification version and working memory may be likely due to common memorial processing. The data pattern with overall inspection time clearly indicates that mental speed has an independent influence on intelligence, along with working memory (as shown in Figure 5).

These findings should be considered in the understanding of individual differences in variables such as age, or even ADHD diagnosis. Controlled attention and working memory are disrupted in ADHD children and adults, however, more information is needed regarding mental processing speed (Payne & Steege, 2013; Kofler et al., 2010). It is possible that there are situations (task demands) or states of being (mood or language disorders) in which difficulty with one type of basic process, may lead to the potential for compensation with the other process. Future research should place emphasis on the causal factors of intra-individual

variation, and the potential for inter-individual variation, as well. Although this study used a standardized measure of a figural reasoning test to assess fluid intelligence, more emphasis could also be placed on situational demands and the impact of speed differences in early academics, such as learning to read, and everyday life activities.

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Chapter 55

VISUAL RECOGNITION OF CHINESE COMPOUND WORDS IS A SERIAL PROCESS

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ABSTRACT

Compounding is an effective way to express new meanings by combining existing concepts. However, the resultant meaning involves not only the sum of meanings of the two constituent concepts but also the semantic relation between them. Compounding is particularly important for the study of Chinese word recognition as compound word is the dominant type of vocabulary in Chinese. The present commentary describes two recent studies using event-related potentials (ERPs) to examine the time course of lexical processing for Chinese compound words. In the first study, we reported the discovery of a novel ERP component, named the centro-parietal N200, which was elicited about 200ms after the onset of two-character words. Evidence suggests that this N200 reflects recognition of the two characters' orthographic form. In the second study, we used a relation priming paradigm and showed that the relation combining meanings of the two characters was activated in the N400 time window about 80ms later than the meaning activation of the individual characters. Together, the results indicate a clear serial process in reading compound Chinese words, first recognizing the word form around 200ms following word presentation, and then starting to retrieve each character's meaning at around 260ms, and finally integrating the two constituting meanings at around 340ms.

Keywords: Compound word; semantic composition; semantic relation; centro-parietal N200; ERP

INTRODUCTION

A fundamental question in reading research is how people recognize words, the basic units of a writing system. Currently, major word recognition models in English are built upon

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studies of simple words (Barber & Kutas, 2007). However, majority of the words in all languages are complex words consisting of several morphemes. While English relies mostly on inflection and derivation to construct complex words, according to a recent corpus study (www.chineseldc.org), Chinese relies mostly on compounding with over 81% compound words in its vocabulary.

One important question in compound word processing is whether these words are processed as a whole (treated as a single perceptual unit) or decomposed into smaller units of morphemes analyzed individually and then integrated for meaning access (e.g., Taft & Forster, 1975). Research has been carried out with behavioral, eye-movements, electrophysiological, neuropsychological, and functional imaging methodologies, leading to full-listing models emphasizing whole-word representations, full-parsing models arguing for automatic and obligatory morphemic decomposition, and dual-route models incorporating both whole-word access and morphemic processing (see Fiorentino & Poeppel, 2007 for review).

THE CENTRO-PARIETAL N200

Recently, we conducted a series of event-related potentials (ERP) experiments on the recognition of two-character Chinese compound words using an immediate repetition paradigm (Zhang et al., 2012). A new ERP response was repetitively observed which peaked at about 200ms following the onset of a compound word (Figure 1). This response was referred to as the centro-parietal N200 component as it showed a broad distribution with a focus in central and parietal electrode sites.

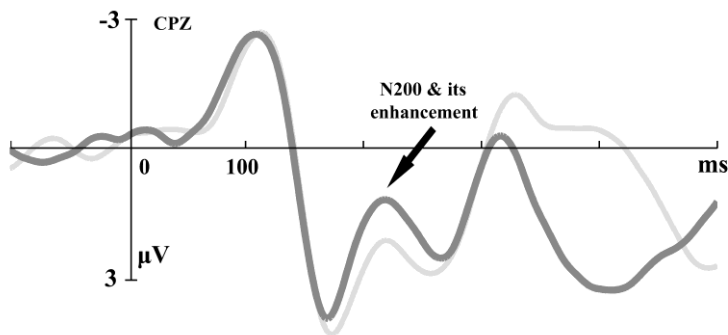


Figure 1. ERP responses elicited by two-character Chinese compound words. A centro-parietal N200 component shows amplitude enhancement upon repetition priming (indicated by the arrow). Gray line for control condition and solid line for repetition condition.

A very unusual characteristic of this component is that its magnitude is significantly enhanced when a word is presented the second time, which is the opposite to what has been typically observed in neural priming. For example, N400 shows amplitude reduction for repetition priming (Henson & Rugg, 2003). Further evidence shows that the N200 is not sensitive to semantic priming or phonological priming, suggesting its association with orthographical processing (Zhang et al., 2012). With face stimuli, Schweinberger et al. (2004) observed repetition priming effects on an N250r component but not the earlier N170

component. That is, for two faces successively presented, that N170 does not differentiate between two same faces and two different faces but N250r does. In their view, this indicates that the recognition of individual face exemplars has been achieved in the N250 but not the N170 time window.

Following this logic, our finding that the centro-parietal N200 (but not the earlier N170) shows repetition effect indicates that the orthographical recognition of Chinese words occurs in the N200 time window. That is, the N200 reflects recognition of the orthographic form of a compound word but not access to its semantic meaning. Therefore, semantic activation of the two constituent morphemes and/or the compound word as a whole should occur after N200, possibly in the N400 response. The study described below not only confirms this expectation but also provides further insight into the time course of compound word meaning activation.

RELATION PRIMING

When two morphemes are compounded to form a new concept, the resultant meaning involves not only the two constituent meanings but also the semantic relation between them. The phrase “dog scarf” can be understood as “a scarf for a dog to wear” when using the relation “for” or as “a scarf with a dog’s image” when using the relation “with” (Raffray et al., 2007). Following linguistics work characterizing the relations that can be used in forming compound concepts (e.g., Levi, 1978; Kay & Zimmer, 1976), a recent CARIN theory (Competition Among Relations in Nominals) proposes that compound concepts are formed by binding two constituents with a specific thematic relation (Gagné & Shoben, 1997) and such relations are important in the interpretation of compound concepts.

Gagné (2000) showed that responses to a compound (e.g., student vote, vote by a student) were faster when the compound was preceded by a compound involving the same relational structure (e.g., student accusation, accusation by a student) than when preceded by a compound involving a different relational structure (e.g., student car, car of a student). Such findings of relation priming are taken to indicate that the relation structure plays a role in compound concept interpretation. Further, relation priming was also found when interpreting familiar noun + noun compound words so that “snowman” (manmade of snow) primed “snowball” (ball made of snow) more than it primed “snowshovel” (shovel for removing snow) (Gagné & Spalding, 2004). Therefore, for familiar and lexicalized compound words, the whole word’s meaning is likely composed by integrating the two constituent meanings with some relation information.

TIME COURSE OF RELATION ACTIVATION

In addition to English, French and Indonesia, relation priming has also been demonstrated in behavioral studies for Chinese compounds (Ji & Gagné, 2007; Storms & Wisniewski, 2005). However, behavioral studies are not sufficient to provide direct evidence about the time course of relation activation in compound word comprehension. Towards this end, we conducted the first ERP study to identify the neural correlates of relation priming.

As in Ji and Gagné (2007), we presented lists of compound word pairs (prime-target) to participants and asked them to make sense-nonsense judgment on each word (Jia et al, 2013). There were three priming conditions, 1) Same condition: the prime and target shared the first constituent and the relation (问句-问号, questioning sentence-question mark); 2) Different condition: the prime and target shared the first constituent but differed in relation (问卷-问号, survey paper -question mark); 3) Neutral condition: the prime and target shared neither a constituent nor the relation (面纱-问号, cotton yarn-question mark). Mean response time was significantly faster for the Same condition than the Different condition (692 vs. 726 ms) and both were significantly faster than the Neutral condition (781ms). The error rates showed a consistent pattern.

The better performance in the Same and Different conditions than the Neutral condition could be attributed to their shared first morpheme resulting in both orthographical priming and semantic priming. Accordingly, the first two conditions elicited a clearly greater N200 response and a smaller N400 response, compared with the later condition (Figure 2).

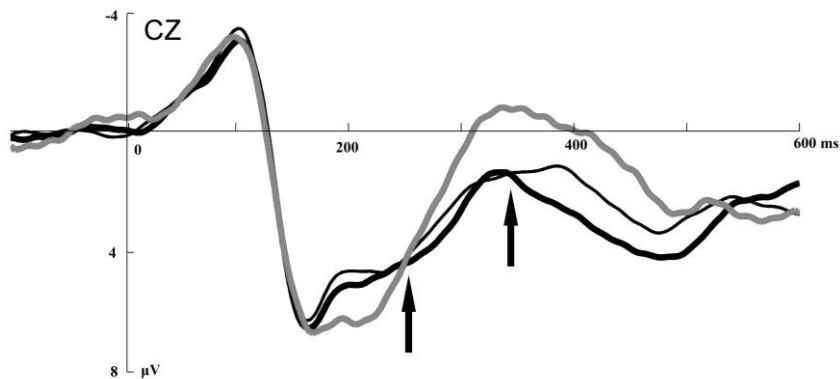


Figure 2. ERP responses elicited by two-character Chinese compound words (targets) under three priming conditions. In the Same condition (thick black line), the target and prime shared the first constitute morpheme and the same relation. In the Different condition (thin black line), the two shared the same constitute morpheme but not the relation. In the Neutral condition (gray line), the two shared neither a constitute morpheme nor the relation. The N400 in the Same/Different conditions diverged from the Neutral condition at around 260ms (indicated by the left arrow), but the N400 in the Same condition diverged from the Different condition at around 340ms (indicated by the right arrow).

The better performance in the Same condition than the Different condition indicates the presence of relation priming. N400 was significantly reduced for the Same condition compared with the Different condition. As no other ERP responses differed across the two conditions, this N400 effect was interpreted to be a neural marker of relation priming.

The critical finding was the temporal order of the two above N400 effects. While for the Same/Different vs. Neutral comparison, the N400 effect started to emerge around 260ms, for the Same vs. Different comparison, the N400 effect started to emerge around 340ms.

As the first N400 effect reflects facilitated semantic processing due to the shared constituent, and the second N400 effect reflects the use of relation information, this pattern of results suggests a serial process. That is, the constituent meanings are activated before relation information is activated to construct the meaning of the whole compound word.

CONCLUSION

The western linguistics has been primarily focused on the study of spoken language, assigning written language a subordinate role for the service of recording speech. In reference to alphabetic scripts, written Chinese has generally been regarded as a logography script with poor sound-recording functions and hence being at the lower stage of written language evolution (Zhou, 1997). A recent meaning-spelling theory points out that at the vocabulary level, written Chinese is a meaning-spelling script (i.e., “piecing together” meaning-denoting visual symbols for the construction of new meanings) simulating the structure of semantic network of knowledge representation in human brain (Zhang, 2011). By this theory, Chinese is a highly mature script following a different route of evolution, differing in logical type from alphabetic scripts.

Among others, this theory makes two specific predictions. One is that Chinese word recognition should rely more on visual processing. The new finding of the centro-parietal N200 lends support to this prediction as it reflects a special processing stage devoted to orthography with no counterpart in English and other alphabetic scripts. The second prediction is that majority of Chinese words, which are compound words, should be comprehended via semantic composition, i.e., integration of individual morpheme meanings. Consistent with this prediction, we identified a temporal difference between morphemic activation and relation activation suggesting a two-stage decomposition-then-integration processing.

Briefly, the combination of neural indices of N200 and N400 and the phenomenon of relation priming offers a new approach to look into the time course of Chinese compound word recognition. The results we obtained so far argue against the notion of direct retrieval of whole word meaning but suggest a meaning construction process, in line with a new theory conceptualizing written Chinese as a meaning-spelling system.

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Chapter 56

LEARNER AND TEACHER CHARACTERISTICS

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THE GOALS OF THE CHAPTER

After reading the present chapter, students will be able to:

1. Define the most important characteristics of learners;
2. Discuss the relationship between these characteristics;
3. Debate the possible differences specific to Turkish culture and foreign language teaching context;
4. Describe the most important characteristics of teachers.

STUDY QUESTIONS

1. As a leading factor, how does age either facilitate or obstruct the process of language learning and teaching? Provide your arguments with specific examples.
2. What are the three learner styles? How do they play a role in assembling the strategies one employs while learning or teaching a language?
3. How do various learning theories define motivation? What are the implications of these definitions for language learners and teachers?
4. What are the main duties of a contemporary language teacher to follow the curriculum and reach the course objectives?

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INTRODUCTION

In language teaching and learning, major roles belong to teachers and learners. Active involvement of these two parties necessitates profound background knowledge of factors which affects the process of learning and teaching language. Deriving from this knowledge, the teacher develops his skill in teaching; the learner learns how to become more successful in achieving his goal, i.e., to learn another language. This chapter will present the basic factors about learners and the basic characteristics of teachers.

LEARNERS

Learners are at the forefront in the language learning process. Without them, it would be impossible to talk about other factors in learning such as teachers, materials, methodology, and so on. There are several important characteristics of learners such as age, language aptitude, motivation affecting the learning process both in a positive and negative way.

AGE

It is generally believed that the younger the learner is, the easier it is to learn another language. Although starting to learn at a very young age gives the learner more opportunity to allocate more time to be in a learning process, there is not enough evidence that children in similar classroom situations are performing better than adults in language learning. It is true that adults have many advantages in terms of memory, organization skills, attention spans, study skills, and handling complex mental tasks. Since they have sturdy motivation, they can easily understand the necessity of learning a foreign language for educational or professional purposes. Moreover, they are more careful about accuracy and appropriateness of language use with right vocabulary.

Besides its advantages, age also has disadvantages. It is generally a requirement for adults to learn a foreign language in a limited amount of time, especially for professional purposes. They may also demand specifically to perform speech acts such as persuading, arguing, expressing concern, objection, explaining, and presenting information about complex issues related to their life, work or education. Since adults avoid making mistakes, they often shrink away from practicing for fear that they would appear foolish, incompetent, or not be able to get their message across. Moreover, it might be more difficult for adults to make friends speaking a foreign language.

Regarding age, the ease with which children can pick up an authentic accent sets a good example to support the superiority of young language learners over adults. But adults in need and with a strong motivation such as diplomats or those with an access to a wide range of opportunities to practice may acquire native-like accent. However, it may cause retention of their cultural and linguistic identity (Harmer, 2013).

Subsequent to general comments of students as children and adults on advantages and disadvantages, it might be good to mention their characteristics in general. But it should be

kept in mind that they are only generalizations, much depends on individual learner differences and motivation as Harmer (2013) notes.

Young Children

Children, up to the ages of nine or ten, reveal certain characteristics as:

- Although they do not understand the meaning of individual words, they respond to meaning.
- Since they learn from everything around them without focusing on a certain topic, they learn indirectly.
- They learn better through the five senses along with from explicit explanation.
- Abstract concepts are difficult for them to learn.
- Generally they have enthusiasm and curiosity to learn the world.
- They are in need to have individual attention and approval from the teacher and adults around them.
- They learn better by examples from themselves and their own lives.
- As they have a limited attention span, activities should be encouraging enough for them to engage in.

Within the childhood period, it is also important to consider changes. For example; games, puzzles and songs are better ways to learn for children at the age of 10 and 11 while dialogues, question-answer activities and matching exercises are more suitable activities for the ones at the age of 12 and 13 (Keskil and Cephe, 2001).

Adolescents

Teenage students are generally perceived as a group of learners difficult to manage despite their relative success as language learners with their greater ability for abstract thought and their passionate commitment to what they are doing once they are engaged (Harmer, 2013).

As teenagers are in search for identity and in need for self-esteem in this period, they all need to be valued and approved by not only adults around them but also their peers mostly. Disruptive behaviors in teenage classes and lack of enthusiasm to learn are the basic issues that teachers have to cope with by persuading the students to engage in learning process through relevant and involving materials.

Learning issues directly, discussing abstract notions, contrasting ideas and concepts with teacher's guidance, linking what they have learnt to their everyday interests are the ways adolescents apply in a humanistic learning environment where their self-esteem is reinforced and their search for identity is aided.

Adults

As language learners, adults have special characteristics. When compared with children and adolescents, adults' ability to engage with abstract notions, their previous experiences on which activities can depend, their expectations and own way of learning, their ability to overcome the feeling of boredom, their clear understanding of the reasons of learning that results in a high level of motivation, their ability to sustain their motivation level help teacher a lot in carrying out activities longer and involving them in a more conscious learning process. The most crucial issue for teachers is to deal with diminishing dreadful effects of their past learning experiences by offering achievable activities and adjusting the learning process according to their needs.

Activity 1

Observe 3-5 students at different ages in your neighbourhood and write at least 5 characteristics for each.

LANGUAGE LEARNING APTITUDE

Dictionary meaning of the word 'aptitude' is the ability and capability of doing something. It is a natural or acquired ability to properly perform some task and is believed to be a part of general intelligence but to be in part distinct.

John Carroll (1965) identified components of language aptitude as:

1. Phonemic coding ability: It is to identify the accepted sounds of a language and to handle sound-symbol relationships, for instance, to identify the sound which "w" stands for.
2. Grammatical sensitivity: It is to recognize the grammatical functions of words in sentences, for instance, the subject and object of a sentence.
3. Inductive language learning ability: It is to identify patterns of correspondence and relations between form and meaning, for instance, to recognize that in English 'to' can denote direction and 'at' location.
4. Rote learning ability: It is to form and remember associations between stimuli. This is believed to be important in vocabulary learning.

The results of researches on language aptitude in the 1950s and 1960s show that the higher score the learners have on language aptitude tests, the more rapidly they learn. However, different components of language aptitude may be implicated in different stages of processing. Phonemic coding ability seems to be relevant to the processing of input, grammatical sensitivity and inductive language learning ability to the central processing stages including interlanguage construction, memory to the storage and access of language but this assumption remains to be searched.

Regarding language aptitude tests, there have been a number of criticisms. Firstly, the content of these tests measured general intellectual ability rather than linguistic talents because they had mostly grammar-focused tasks. So, analytic-type learners had higher scores

than holistic learners as they use language in a more message-oriented way. Secondly, low scores adversely affected students and demotivated them in their future learning experiences. Moreover, teacher's treatment to students scoring low would inevitably be biased.

As a result of discussions on the language aptitude, the characteristics of 'good language learners' have been tried to be identified (e.g., Naiman, et al., 1978, Rubin and Thompson. 1982, Lightbown and Spada, 2006). The common points of the good learner characteristics can be listed as the tolerance of ambiguity i.e., learning to live with uncertainty, being positive towards learning, finding own way by using aspirations and creating opportunities to practice, being able to guess by using contextual clues, reasoning out of mistakes. This list can be longer but they have been put forward as a result of teaching practice in western-influenced methodologies (Harmer, 2013). Since these characteristics are to a significant extent culture-specific, training students in order to gain the qualities of an ideal learner requires great amount of time and effort in the process of 'learning to learn' as a combination of motivation and effective strategies. Moreover, learners who did very well in their formal education in language learning may not be highly competent outside classroom, especially with native speakers.

Activity 2

Survey the language aptitude tests e.g., "Modern Language Aptitude Test" on the web, discuss its components of your choice and comment on whether there are any contradictory issues in terms of its use within a Turkish EFL context.

LEARNER STYLES

'Style' is defined as individual tendencies or preferences and general characteristics of intellectual functioning and personality type that are pertinent to individual (Brown, 2000). While solving or approaching a problem, we make use of established link between our personality and cognition, i.e., our cognitive style. Referring to learning process, they are called 'learning styles.' According to Keefe (1979), learning styles include cognitive, affective and physiological traits as the steady indicators of how learners perceive, interact with, and respond to the learning environment. As learning styles are bridges between emotion and cognition, the selection of sensory, communicative, cultural, affective and intellectual factors (Ausubel, 1968, Hill, 1972, Reid, 1995, Ehrman 1996, Cohen, 1998 cited in Brown 2000) contribute a lot to successful learning.

Among learning styles, the field independent style enables the learner to distinguish parts from a whole, to concentrate on something, to analyze separate variables without negatively affected by the other ones. However, 'too much' field independency may lead the learner to deal only with parts but not to establish their relationship to the whole. A field dependent style may help the individual perceive the whole picture or general view of a problem, idea or event. So, both field independency and field dependency have their own place in learning process. In different cultures, children are raised with a general tendency towards being either field independent or field dependent. For example, in authoritarian or agrarian societies, individuals are more field dependent due to high socialization and strict rearing practices. In democratic, industrialized, competitive societies, the individuals tend to be more field independent due to freer rearing norms (Brown 2000).

As affective factors, it can be said that field independents are generally more self-reliant, competitive and self-confident, whereas field dependents are generally more socialized, empathetic and perceptive of the feelings and thoughts of others.

In language learning environments, researches disclose that field independents are more successful in analyzing, paying attention to details and doing exercises, drills, and other focused activities (Naiman et al., 1978, Hansen, 1984, Hansen and Stansfield, 1981, Stansfield and Hansen, 1983). On the other hand, field dependents display better results in inductive lessons and learning the communicative aspect of language.

These seemingly paradoxical results demonstrate that both styles are important. In face-to-face communication, the learner needs to be more field independent; in doing exercises, tests, he needs to be more field independent. Concerning age, compared to adults, children are predominantly more field dependent which can be considered as an advantage.

Depending on the context of learning, learners may vary in their utilization of being field independent or field dependent. So, choosing the appropriate style for the context is the point that the learner should be careful about and teachers should understand his learners' preferred styles.

The second learning style is related to right- and left-brain dominance. In the lateralization process throughout childhood, the left and right hemisphere become responsible for a diverse array of functions. The left hemisphere is for logical, analytical thought, with mathematical and linear processing of information. The right hemisphere is for the perception and remembering of visual, tactile and auditory images, the processing of holistic, integrative and emotional information. As Krashen, Seliger and Hartnett (1974) suggest, left-brain-dominant second language learner preferred a deductive style of teaching, while right-brain-dominant learners appeared to be more successful in an inductive classroom environment. The study by Stevick (1982) mentions that left-brain-dominants in language learning are better at producing separate words, gathering the specifics of language, carrying out sequences of operations, and dealing with abstraction, classification, labeling, and reorganization. Right-brain-dominant learners seem to deal better with whole images, with generalizations, with metaphors, and with emotional reactions and artistic expressions (cited in Brown 2000).

Activity 3

Studies reveal a strong relationship between field independency/dependency and left- and right-brain functioning. Find out the left- and right-brain characteristics in other sources or on the Internet and discuss the relationship by mentioning similarities and differences.

As the third style, ambiguity tolerance means the degree of cognitively willingness to tolerate ideas countering the individual's belief system or structure of knowledge. Relatively open-minded people can accept the contradictory ideas, ideologies, beliefs, etc. whereas more conservative people tend to reject different ideas as far as they do not fit their own perception. Regarding language learning process, both styles contribute a lot, especially ambiguity tolerance. Chapell and Roberts (1986) and Naiman et al. (1978) found that ambiguity tolerance is one of the important factors in successful language learning. As Brown (2000) suggests, "it is hard for a person who sees everything in black and white with no shades of gray ever being successful in the overwhelmingly ambiguous process of learning a second language."

Being reflective or impulsive is another important tendency in cognitive domain. Reflective people are slower and more calculated in making decisions, whereas impulsive people make a quick or gambling guess at an answer to a problem. According to studies (Kagan, 1965; Goodman, 1970; Kagan, Pearson and Welch, 1966; Doron, 1973; Jamieson 1992):

- Reflective people are slower, e.g., in reading and make fewer mistakes but impulsive people read fast and make guesses a lot.
- Reflective people are better in inductive reasoning.
- Learners who are impulsive are good guessers in tests.

So, for language teachers, it is important not to react harshly to the answers of impulsive learners and to be more patient to allocate more time for reflective learners.

Last but not least, learning style is the preference of learners towards visual or auditory input. Visual learners choose mostly visual aids like drawings, pictures, charts, figures, etc. while auditory learners prefer listening to lectures and other listening materials. In the same path with other learning styles, both are implemented by most successful learners.

Activity 4

Within the context of ambiguity tolerance, visual and auditory learning styles, discuss the effect of culture.

LEARNER STRATEGIES

‘Strategy’ is the specific method of approaching a problem or task, modes of operation for achieving a particular end, planned designs for controlling and manipulating certain information (Brown, 2000). In second language learning, it is possible to distinguish two strategies: learning strategies and communication strategies.

Learning strategies are related to how the individual takes input, i.e., how to process, store and retrieve the given information, while communication strategies are about output, i.e., how to express meaning. During 1970s, studies proved the important role of learners including variation in learning process. So, personal characteristics, styles and strategies of ‘good’ or ‘successful’ language learners were enumerated and these characteristics are used as pieces of advice to be better language learners (e.g., Rubin, 1975; Stern, 1975; Rubin and Thompson, 1982; Naiman et al., 1978; Brown, 1991; Marshall, 1989).

In compliance with the scope of the study, the list of learning and communication strategies will be given as an encapsulated summary. If a teacher training program has enough time and space, a course on strategies-based instruction would be very helpful for prospective teachers.

Learning Strategies

- A. Metacognitive strategies: They involve organizing, planning for learning, thinking about the learning process as it is taking place, monitoring of one's production or comprehension, and evaluating learning after an activity is completed (Purpura, 1997). It can be exemplified as being an advanced(?) organizer, directing attention, selective attention, self-management, functional planning, self-monitoring, delaying production and self-evaluation (O'Malley et al., 1985).
- B. Cognitive strategies are limited to specific learning tasks and involve more direct manipulation of the material itself as the processes of repetition, resourcing, translation, grouping, note taking, deduction, recombination, using imagination, auditory representation, using keywords, contextualization, elaboration, transfer and inferencing (O'Malley et al., 1985).
- C. Socioaffective strategies are to do with social mediating activity and interacting with others. They could possibly be formulized as cooperation and asking questions for clarification (O'Malley et al., 1985).

Communication Strategies

- A. Avoidance strategies are applied when the learner is not sure about the right lexical item or appropriate pronunciation. He may also avoid the topic of the conversation by changing the subject, pretending not to understand or not responding at all (Dörnyei 1995).
- B. Compensatory strategies cover circumlocution (e.g., the thing you open bottles with for *corkscrew*), approximation (e.g., *ship* for *sailboat*), use of all-purpose words (e.g., thing, stuff), word coinage (e.g., *vegetarianist* for *vegetarian*), prefabricated patterns (e.g., Where is the?), nonlinguistic signals such as mimes, gestures, facial expressions, literal translation, foreignizing (e.g., adding to L1 lexical item a L2 suffix), code-switching, appeal for help and time-gaining strategies (e.g., *well, now let's see*).

Activity 5

Regarding characteristics of 'good language learner', add more in terms of Turkish educational context.

THE AFFECTIVE DOMAIN

In relation to learning another language, different degrees of specific personality factors such as self-esteem, inhibition, risk-taking, anxiety, empathy, and extroversion contribute a lot to the performance of the learners either in a positive or negative way.

Self-esteem is defined as the personal evaluation and judgment including the attitude of approval or disapproval, the feeling of worthiness, and the subjective experience. The 'global' self-esteem is stable and resistant to change. The self-appraisal of the individual depends on

the assessment of one's own worth over time and different situations. The 'situational' self-esteem is one's self-appraisals in particular life situations. The 'task' self-esteem refers to particular tasks within specific situations, for example one's self-evaluation of particular aspect of the process: speaking, writing, a particular class in a second language.

Inhibition is pertinent to defenses to protect the ego. In language learning, making mistakes is inevitable, which causes a growth in tension students have. Taking on a new identity may lead to some degree of identity conflict. For similar reasons, the learner may hinder himself from practicing in learning environment.

Risk-taking which is a continuum from high to low means to gamble, to be willing to try out hunches about the language and take the risk of being wrong (Brown, 2000). In order not to feel embarrassed or appear foolish, learners may prefer to keep silent and be reluctant to take risks.

Anxiety is defined as the feelings of uneasiness, frustration, self-doubt, apprehension, or worry (Scovel, 1978 cited in Brown, 2000). It has different levels: The 'trait' anxiety is global, i.e., a person is anxious about numerous matters, whereas the 'state' anxiety refers to a specific event or an act. In language learning, language anxiety is concerned with state anxiety which primarily manifests itself in self-expression, social and academic evaluation. The degree of anxiety functions as an arbiter since it can either be 'harmful' (debilitative) or 'helpful' (facilitative). As it is known, facilitative tension keeps one alert and enough amount of feeling of nervousness is a stimulating factor in the learning process, whereas debilitative anxiety may preclude the learner from taking notice of his real performance.

Empathy generally refers to understanding how another person is feeling. It necessitates an awareness and knowledge of one's own feelings and identification with another person (Hogan, 1969 cited in Brown, 2000). So, empathy means not only knowing someone else but also being aware of yourself. The language learning process requires the learner to have a certain degree of empathy towards the target culture and other learners within the learning environment.

Together with its counterpart i.e., introversion, extroversion is a term used to define people who are talkative, outgoing but having a need to receive affirmation of other people for a sense of wholeness. On the other hand, introversion characterizes people who are silent and reserved but also can have a sense of wholeness and fulfillment derived from an inner strength of character. Moreover, being extrovert or introvert, carrying out different assets and liabilities may vary across different learner groups, and it's sensitive to cultural norms.

Activity 6

As teachers, how can we measure the affective domain of our students? Search about the different tools and discuss the problems that such tools present.

MOTIVATION

For language teachers, it is crucial to describe the components of motivation, motivated people's behaviors, and the ways of creating motivation for language learners.

Different learning theories have provided definitions of motivation from different aspects. Behaviorism describes motivation as a factual matter, i.e., acting towards reward

using generally external factors. On the other hand, cognitivists define motivation as the individual's decisions based on personal needs and forces which are grouped as the need for exploration i.e., probing the unknown, manipulation i.e., changing the environment, activity i.e., physical and mental movement, stimulation i.e., being actuated by others and the environment, knowledge i.e., to process, internalize, the results of the previous needs and moving on to the next step in the systems of knowledge and ego enhancement i.e., self-realization. For constructivists, motivation is shaped not only by the individual himself but also by the social context. A hierarchy of needs is defined by Maslow (1970) who considered motivation as dependent on the satisfaction of fundamental physical necessities, community, security, identity, and self-esteem; all of which lead the individual to self-actualization.

Regarding language learning process, Ellis (2003) states that language aptitude deals with the cognitive abilities, on the other hand, motivation includes the attitudes and affective states influencing the degree of effort made by learners. Four types of motivation have been identified as instrumental, integrative, resultative, and intrinsic.

Instrumental motivation defines functional reasons to learn an L2 such as educational and economic opportunities. Integrative motivation refers to the interest of learners in the people and culture of the target language. Since integrative motivation may be seen as the cause of L2 achievement, resultative motivation is the result of learning, i.e., learners achieving success in learning may become more motivated. Lastly, intrinsic motivation includes the personal curiosity and interest in learning itself.

The nature of motivation is complex and dynamic. These four types of motivation are complementary rather than distinct issues, and subject to change depending on the learning context.

Activity 7

Considering the Turkish learners of English or any other foreign languages, discuss the factors that may motivate and demotivate them to learn.

TEACHERS

Since foreign/second language teachers having a crucial role in learning process are supposed to pave the way for changes in learners' behavior, attitude, knowledge, habits or skills in an unfamiliar language; they are to be a combination of linguist, sociologist, anthropologist, pedagogue, (Finocchiaro and Bonomo 1973) and even an artist at times.

As a teacher, while following the curriculum and striving to reach the course objectives, he should be able to

1. Select the right course material by taking into consideration the learners' age, proficiency level, interests, learning styles, etc. at the beginning of the language teaching program.
2. Adapt or modify the content provided by the course materials depending on the learners' needs, motivation, learning strategies, etc.

3. Utilize the available instructional materials at utmost level possible, as well as supplement additional materials in relation to students' characteristics and needs.
4. Act as a carrier of culture, that is, introduce the features of the target language culture in a comparison to the native context along with the language itself.
5. Keep the motivation of his students at a high level not only by implementing various methods and techniques but also by creating a positive atmosphere where the learners feel secure, successful and triumphant.
6. Conduct a variety of activities addressing the learners with different learning capacities, skills, styles and strategies by organizing the learning experiences carefully in order to facilitate the learners' acquisition.
7. Systematize not only habit formation but also meaningful use of the language as used by the native speakers.
8. Keep the previously learned language items alive by fostering necessary learning strategies.
9. Implement right ways of classroom management such as whole, group, peer, or individual work where it is necessary in accordance with the activity requirements.
10. Incorporate activities requiring simultaneous implementation, e.g., setting the CD while practicing listening and writing task concurrently.
11. Approximate in-class activities to the authentic practices of students to let them engage in a true-to-life atmosphere by integrating diverse language skills into communication situations and simulating the real ones where learners will need to use the foreign language.
12. Follow students' performance regularly through tests, portfolios, projects, etc. in order to check learners' achievement, to diagnose individual learning problems, and to reflect on his own performance in teaching.

Encourage students to take advantage of facilities provided by self-access centers to create and enhance opportunities inside and outside the classroom/school for the learners where they can actively involve.
13. Follow new techniques, technology, materials by establishing good relations with other colleagues and participants in language teaching professional world.

The key roles of a good language teacher can be summarized as “planner,” “organizer,” “guide,” “coach,” and “researcher.” Many other roles can be added to this list since the teacher's role is subject to change according to the teaching environment including not only the classroom but also the school and the society.

Qualifications of teachers include three important issues: 1. Personal qualities, 2. Well-balanced education including knowledge of his own language and culture, and 3. Training in professional education and psychology. Regarding the language proficiency level of the teacher, Finocchiaro and Bonomo (1973) adapted the standards prepared by the Steering Committee of the Modern Language Association as;

	Minimal	Good	Superior
Aural understanding	The ability to get the sense of what an educated native says when he is enunciating carefully and speaking simply on a general subject.	The ability to understand conversation at average tempo, lectures, and news broadcasts.	The ability to follow closely and with ease all types of standard speech, such as rapid or group conversation, plays and movies.
Speaking	The ability to speak on prepared topics (e.g., for classroom situations) without obvious faltering, to use the common expressions needed for getting around in the foreign country, and to speak with pronunciation readily understandable to a native.	The ability to talk with a native without making glaring mistakes and with a command of vocabulary and syntax sufficient to express one's thoughts in sustained conversation. This implies speech at normal speed with a good pronunciation and intonation	The ability to approximate native speech in vocabulary, intonation, and pronunciation (e.g., the ability to exchange ideas and be at ease in social situations).
Reading	The ability to grasp directly (i.e., without translation) the meaning of simple, non-technical prose, except for an occasional word.	The ability to read with immediate comprehension prose and verse of average difficulty and mature content.	The ability to read, almost as easily as in the native tongue, material of considerable difficulty, such as essays and literary criticism.
Writing	The ability to write correct sentences or paragraphs such as would be developed orally for classroom situations, and the ability to write, a short, simple letter.	The ability to write a simple "free composition" with clarity and correctness in vocabulary, idiom, and syntax.	The ability to write on a variety of subjects with idiomatic naturalness, ease of expression, and some feeling for the style of the language.
Language analysis	A working command of the sound patterns and grammar patterns of the foreign language, and a knowledge of its main differences from the native language of the learners.	A basic knowledge of the historical development and present characteristics of the language, and an awareness of the difference between the language as spoken and as written.	The ability to apply knowledge of descriptive, comparative, and historical linguistics to the language teaching situation.
Culture	An awareness of language as an essential element among the learned and shared experiences that combine to form a particular culture, and a rudimentary knowledge of the geography, history, literature, art, social customs, and contemporary civilization of the foreign people.	First-hand knowledge of some literary masterpieces, an understanding of the principal ways in which the foreign culture resembles and differs from our own, and possession of an organized body of information on the foreign people and their civilization.	An enlightened understanding of the foreign people and their culture achieved through personal contact, preferably by travel and residence abroad, through study of systematic descriptions of the foreign culture, and through study of literature and the arts.
Professional preparation	Some knowledge of effective methods and techniques of language teaching.	The ability to apply knowledge of methods and techniques to the teaching situation (e.g., audio-visual techniques) and to relate one's teaching of the language to other areas of the curriculum.	A mastery of recognized teaching methods, and the ability to experiment with and evaluate new methods and techniques.
Activity 8 Think about teachers you had throughout your education and state why they were 'good' or 'bad' teachers.			

CONCLUSION

Teaching profession necessitates the participants to have a high level of awareness of the personal factors affecting the learning process. Teachers should not only be equipped with theoretical knowledge about them but also with the ability to identify and handle all possible teaching situations where individual differences appear as the leading factors. Since promoting the learner's performance requires knowing the personal factors including strengths and weaknesses, and working on them by applying suitable techniques, teachers have the key role in raising the learners' awareness of them, and creating the necessary conditions and opportunities to facilitate the learners' improvement in language learning. For learners, having enough amount of information about themselves, their needs, and how to develop and meet them would contribute a lot in becoming an independent and successful language learner due to the fact that a language consists of a huge amount of forms, functions and meanings which cannot be taught solely by the teachers. Learning to learn will make the learners autonomous and efficient in their journey.

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Chapter 57

LESSON PLANNING IN LANGUAGE TEACHING

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THE GOALS OF THE CHAPTER

After reading the present chapter, students will be able to:

1. List the most important elements that should exist in a lesson plan.
2. Identify the significance of lesson planning in the process of language teaching.
3. Define what syllabus is and different types of syllabi.

STUDY QUESTIONS

1. Is it necessary to plan a lesson? If yes, how should it be prepared?
2. What are the most important elements that should exist in a lesson plan? How should they be organized?
3. What is syllabus? How many different types of syllabus do you know?
4. How does syllabus affect lesson planning?

INTRODUCTION

Planning is a necessary step no matter what business you are involved in if you want to achieve your goals. If we consider teachers as “the managers” of the student learning, s/he also needs to know exactly what s/he intends to do in the class. There are four main things that a teacher needs to know before going to the class to teach:

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- the aim of the lesson
- what new language the lesson contains
- the main stages of the lesson (when and how to organize different activities)
- what to do at each stage

A lesson plan is a very useful tool which can be seen as a combination of guide, resource, and historical document reflecting our teaching philosophy, student population, textbooks and most importantly, our goals for our students (Jensen, 2001). Jensen also suggests that “a lesson plan is essential for novice teachers and convenient for experienced teachers” (p.403).

WHY SHOULD TEACHERS PLAN LESSONS?

Teachers should plan lessons so as to:

- achieve the objectives
- prepare and use a variety of teaching-learning activities
- select and prepare appropriate teaching-learning resources
- be able to time, sequence and link the stages of a lesson effectively in the class
- use the learning/teaching materials in an organized way
- organize groupwork/pairwork activities effectively

Before a teacher starts teaching, s/he should have developed his/her own understanding of second language learning/teaching. Knowledge of theories of SLA, learner characteristics, historical and current trends in second language pedagogy are some examples for teachers to take into consideration while they are developing their ideas. This stage is called “*pre-planning stage*”. In this stage, the teacher may benefit from a variety of sources (Harmer, 2007); namely, teachers’ seminars, internet, TV. At this stage, it is important to pay attention to the learners’ level, their personalities, and the requirements of the syllabus.

Syllabus is one of the most important components of lesson planning. According to Ur (1996, p.176), a syllabus is “a document which consists, essentially, of a list”. She lists the characteristics of a syllabus in the following way:

1. It consists of a comprehensive list of *content items* (words, structure, topics) and *process items* (tasks and methods).
2. It is ordered (easier, more essential items first).
3. It has explicit objectives (usually expressed in the introduction).
4. It is a public document.
5. It may indicate a time schedule.
6. It may indicate a preferred methodology or approach.
7. It may recommend materials.

There are many different types of syllabi suggested for language teaching. They are not totally different from each other. Although different types of syllabi are presented, in practice,

they rarely appear independently. Ur (1996, p.178) lists some of the most common syllabus types in the following way:

- a) Grammatical Syllabus: A list of grammatical structures, such as relative clauses, the simple present tense, usually divided into sections graded according to difficulty and/or importance.
- b) Lexical Syllabus: A list of lexical items (man, woman, go out...) with associated collocations and idioms, usually divided into graded sections.
- c) Grammatical-Lexical Syllabus: A very common kind of syllabus: both structures and lexis are specified: either together, in sections that correspond to the units of a course, or in two separate lists.
- d) Task-Based Syllabus: This type of syllabus is based on Task-Based Learning, an approach where learners can carry out tasks such as solving a problem or planning an activity. The language learnt comes out of the linguistic demands of the activity. A task-based syllabus is structured around a series of these tasks.
- e) Topic-Based Syllabus: It takes real life contexts of language use as its basis and headings are broadly topic-based, including things like “Food” or “The family”; these usually indicate a fairly clear set of vocabulary items, which may be specified.
- f) Functional-Notional Syllabus: Notions are concepts that language can express such as time, place, whereas functions are things you can do with language such as identifying, denying. In these syllabuses, functions and notions are combined.
 - According to Ur (1996, p.92), a notion is a concept, or idea: it may be quite specific, in which case it is virtually the same as vocabulary (dog, house, for example); or it may be very general –time, size, emotion –in which case it often overlaps with the concept of ‘topic’. A function, on the other hand, is some kind of communicative act: it is the use of language to achieve a purpose, usually involving interaction between at least two people.

TASK 1: Look at the following list and decide which of them are functions (F) and which of them are notions (N)

Location	advice	threat
Food	money	crime
Complaint	suggestion	apology

(adapted from Ur, 1996, p.93).

- g) Mixed or Multi-Strand Syllabus: Increasingly, modern syllabuses are combining different aspects in order to be maximally comprehensive and helpful to teachers and learners; in these you may find specification of topics, tasks, functions and notions, as well as grammar and vocabulary.

Basic Principles of Lesson Planning

Jensen (2001, p.406-407) states that there are some basic principles to be taken into account while planning a lesson, which are:

1. *A good lesson plan has a sense of coherence and flow.* No matter what the subject is, a lesson does not consist of a sequence of discrete activities. For teachers, it is important to connect the various lessons over the days and weeks of a course. In addition, students need to understand the rationale for each activity and they can learn better if they see the connections between activities.
2. *A good lesson exhibits variety.* A certain degree of predictability in terms of the teacher, the texts, classmates, and certain administrative procedures is comforting; however, to avoid boredom and fatigue, lesson plans should not follow the same pattern day after day. In addition, there should be variety in terms of topics (content), language, and skills over the length of the course.
3. *A good lesson is flexible.* When a lesson is planned, it does not mean that the teacher has to follow it strictly. Good teachers know when it is time to change an activity, regardless of what the lesson plan says. A question posed by a student out of the blue may change the direction of the lesson and may lead to teaching a related topic.

What Should Be Included in a Lesson Plan?

Since there are different teaching institutions with different systems, it is impossible to say exactly what a plan should be like. There are a variety of formats to be used but the teacher should consider the background of the students, the objectives of the lesson, the skills to be taught, the activities, the materials and texts, the time constraints, and the connections to previous and future lessons (Jensen, 2001, p.404). However, there are a number of elements that are always present in most of the lesson plans.

TASK 2: Work in groups and discuss which of the elements of lesson plans you would use in a lesson plan for teaching English and circle the related numbers

Elements of lesson plans

1. number of learners	11. aids used	21. different colors for important points
2. overall aims	12. timing of each stage	22. review of last lesson
3. aims of each stage	13. skills practiced	23. sex of learners
4. coursebook used	14. page numbers	24. short description of each activity
5. numbers of exercises/activities	15. anticipated problems	25. level of class
6. what the learners do at each stage	16. new vocabulary	26. time of class
7. what the teacher does at each stage	17. extra activities	27. name/number of class
8. materials used	18. age of learners	28. length of class
9. homework	19. the date	29. which learners work together
10. groupings of learners (individuals/pairs/groups/ whole class)	20. interaction (e.g., S-S, S-T)	30. abbreviations (e.g., L= learner)

(Tanner & Green, 1998).

The following components take place in most of the lesson plans no matter what the subject matter and the formats are:

Aims

Aims are considered to be one of the most important elements in a lesson plan. According to Harmer (2007, p.371), the aims in a teacher's lesson plan are "the outcomes which all our teaching will try to achieve –the destinations on our map". Aims should be associated with what we expect our students to do, not related to what we are going to do. Harmer (2007) suggests the following criteria to describe lesson aims:

- a. Specific
- b. Measurable
- c. Achievable
- d. Realistic
- e. Timed

Tanner & Green (1998, p.102) mentions the following types of aims that can be included in a lesson plan:

Type of Aims	Examples
Topic aims	Learners discuss capital punishment
Grammar aims	Learners practise Present Perfect Tense by writing a grammar exercise from the book.
Communication aims	Learners talk to each other about what they do every Saturday.
Vocabulary aims	Learners listen for all the words related to school.
Function aims	Learners learn how to complain in a shop.
Skill aims	Learners write a holiday postcard.
Pronunciation aims	Learners identify the difference between /ɪ/ and /i:/ sounds.
Group dynamics aims	Learners discuss their learning experience this term.
Reviewing aims	Learners revise the vocabulary from the last unit.
Cultural aims	Learners read about recent political events in an English-speaking country.
Organizational aims	Learners correct last week's homework in the workbook.

Class Profile

This part includes a short description of who the students are, the number of the students, their level, their genders, etc. If the number of the students in a class is small, more detailed information about the individual students might be included in the lesson plan as well, e.g., *A is very silent but usually good at writing activities. B likes to participate in classroom discussions but does not submit his/her assignments on time.*

Procedure

In this part of the lesson plan, the steps or stages of the lesson, which are necessary to ensure that the lesson aims are achieved, are included. Activities, transition notes, as well as time management and class management notes such as the students' seating arrangements for different activities are the other important components included in this part. In addition to these, it is a good idea to include the indications of what you will do, what the students will

do, how long you expect it to last, what kind of interaction there will be, what the aims of each stage are, etc.

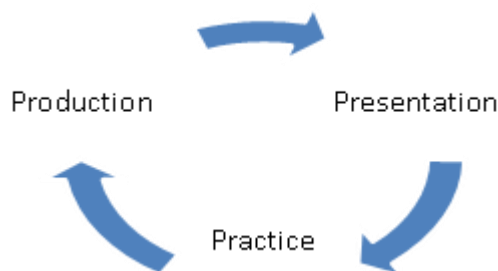
While preparing this part of the lesson plan, it is a good idea to ask the following questions:

- How much time do I have?
- How will I divide up the lesson into stages?
- How much time will each stage take?
- What will be the aim of each stage?
- How will the stages be linked? (Gower, et al., 1995).

In this part of the lesson, the teacher also details classroom interactions. Who will interact with whom ($T \rightarrow S$, $T \rightarrow SS$, $S \rightarrow S$), how long will each activity take, what techniques should be used, etc. are some of the details that could be included in the lesson plan.

There are different types of lesson procedures that might be adopted by the teachers while teaching English in an EFL/ESL context. Here are some of the most commonly used ones:

1. *The PPP (Presentation-Practice-Production) Model*: This procedure has been the most traditional classroom procedure since Audiolingualism was suggested as a language teaching method. In the Presentation part of the procedure, the new language form is presented to students either deductively or inductively. Visual materials, songs, video clips, stories are other forms of presentation. In the Practice part of the procedure, students have the chance to practise the new language form presented in the first part. This practice may be done through some drills or exercises. In the Production part of the procedure, students are asked to produce utterances including the newly-studied language form. They may be asked to write sentences, paragraph or do a role-play.



2. *The ESA (Engage-Study-Activate)*: This procedure was suggested by Jeremy Harmer as an alternative to the traditional PPP Model because of the criticisms stating that in such a procedure, lessons are teacher-centered and students are passive. In this alternative procedure, the lesson starts with an Engagement part in which teachers aim to engage students emotionally. This can be achieved through some warm-up activities, games or any activities that students might find interesting. In the second part of the procedure, Study, the lesson focuses on how a language form is constructed. Teachers can directly emphasize a grammatical form or draw students'

attention to a language form in a communicative task. Activate is the last part of the procedure. In this part, students are encouraged to use the language meaningfully with the help of some communicative tasks.

3. *The OHE (Observe-Hypothesize-Experiment)*: This procedure is the one that was suggested as a way of teaching vocabulary in *The Lexical Approach* by Michael Lewis. In the first part of the procedure, students observe language in use through listening to or reading a text. Then, they hypothesize about how language works. In the last step of the procedure, they try to experiment it by using them in new contexts.
4. *Pre-task, Task Cycle, Language Focus*: This is the course sequence which is used in Task-Based Language Teaching contexts. In the Pre-Task stage, the teacher and the students try to explore the topic together and the instructions of the task are clarified. In the Task-cycle stage, including three subtitles, which are Task, Planning and Report, the students work together so as to perform the task; afterwards, they plan how they will tell their friends what they did, and then, they report on the task either orally or in the written way. In the last stage of the procedure, Language Focus, students and the teacher work on specific linguistic features of the task and/or they can do some exercises based on the problems that appeared in the previous stages.

Anticipated Problems

No matter how careful or experienced you are, there is always a possibility of having problems in your lessons. A good lesson plan “tries to predict potential pitfalls and suggests ways of dealing with them” (Harmer, 2007, p.373). It is a good idea to include a part related to “anticipated problems” and “possible solutions” in your lesson plan as the one in the following:

<i>Anticipated Problems</i>	<i>Possible Solutions</i>
Students may have difficulty in understanding the difference between “should+have+V3” and “must+have+V3” structures.	I will prepare extra worksheets including different examples with these structures and exercises.

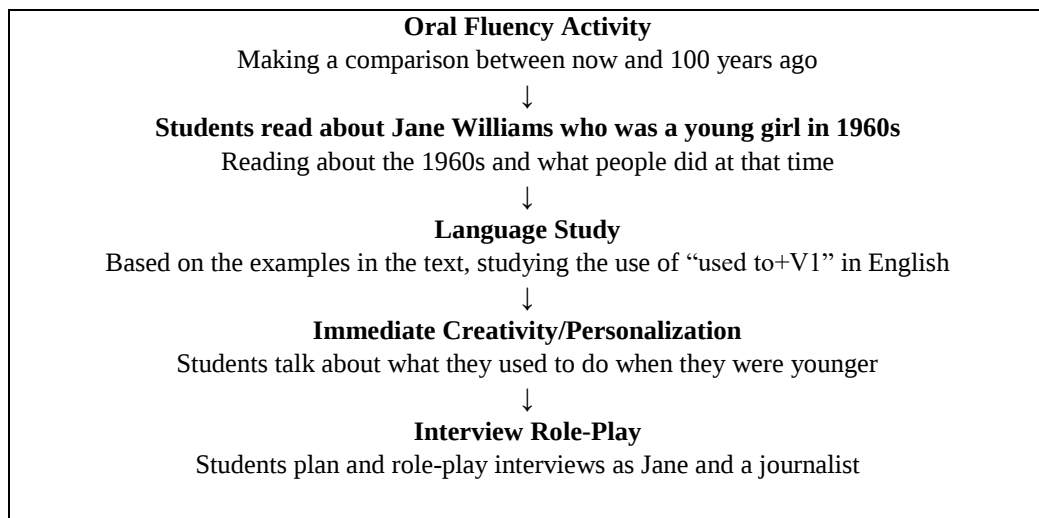
This part is also important in case of problems related to time management, class management and classroom organization. Gower, et al. (1995, p.178) state that it is a good idea to think about what you would do if:

- the students take a longer or shorter time to do the activities than you had planned;
- they find an activity easier or more difficult than you thought they would;
- some students finish before the others;
- there are some students who need extra support;
- there are uneven numbers for a pair work activity;
- some or all of the students have already met the material you have based your lesson round: for example, they have already seen the video you were planning to show.

Materials, Aids and Equipment

Teachers should ask themselves “what materials, aids or equipment will I need at each stage of my lesson?” They should make a note in their lesson plan of when they will use these materials and aids.

A Sample Lesson Plan



(Adapted from Harmer, 2007).

Reading Text

Jane Williams was a young girl in the 1960s. Read what she says about it.

I was a young girl in the 1960s. I used to do many things that I don't do anymore. I used to dance to the music of Elvis Presley and the Beatles. I used to watch films with Marlon Brando and Elizabeth Taylor. I used to smoke a lot, wear very short skirts, and go fishing with my father. I didn't use to attend most of my courses instead; I used to drive to Brighton with my boyfriend. I used to argue with my mum a lot because I used to spend a lot of time away from home. I miss those days so much.

Aims

1. To give students practice in reading for detail.
2. To enable students to talk about what they used to do when they were younger.

Class Profile

The students in this pre-intermediate class are between the ages of 20-25. There are 10 girls and 15 boys. Since the class starts at 8.00 a.m., students are a bit sleepy in the first lesson; however, they become more active and enthusiastic after the break time. They like visual materials and listening to songs in English.

Anticipated Problems and Possible Solutions

Students might have difficulties in using “Used to” in positive and negative sentences and questions. In order to cope with this problem, extra exercises might be supplied by the teacher.

A Sample Procedure (Adapted from Harmer, 2007)

	Activity/Aids	Interaction	Procedure	Time
1	Making comparison and contrast	S ⇄ S	Students work in pairs and make a comparison between now and 100 years ago Students write down the ideas that they have come up with.	4”
	Pen and paper	SS		3”
2	Reading	S,S,S	Students read the text individually	3”
3	Language study	T ⇄ C	T elicits sentences from the text including unfamiliar grammar structures and then explains the use of “used to” in English. <i>I used to do many things that I don't do anymore.</i> <i>I used to dance to the music of Elvis Presley and the Beatles.</i>	10”
4	Textbook page.....	T ⇄ S, S,S	<i>I didn't use to attend most of my courses</i> T has SS do the exercises in the book	15”
5	Discussion	S,S,S	Students talk about what they used to do when they were younger	3”
6	Role-Play	SS ⇄ SS	Students do the role-play between Jane and the journalist	2”

Alternatives to Formal Planning

Even though there are important reasons why teachers need to plan their lessons, it is not carried out in practice very frequently. According to Gower and Walters (1995, p.129), there are various reasons behind this:

- teachers haven't got time
- the lesson methodology they wish to use cannot easily be characterised using the suggested formats
 - it doesn't seem an economical or helpful way of describing a lesson's way of working
- it might restrict teachers' freedom to respond to learners in class
- the lesson content and/or aim will emerge during the class rather than pre-decided
- teachers' priority is to create a specific atmosphere, a certain type of rapport, etc.
- teachers may want to experiment or work on specific aspects of their teaching

Instead of preparing a formal lesson plan, Gower and Walters (1995) suggest the following alternatives:

1. *Half-Plan*: This alternative might be preferred by experienced teachers or by the ones that are self-confident about their own language awareness and of their own ability to quickly think of mini-activities. Put your energy into planning how your class will do skill work (e.g., reading, speaking, etc.). Don't plan any work related to the language system. In class, spontaneously work on language issues as they come up if they are useful, interesting and appropriate for students.
2. *Focus on the "Critical Learning Moments"*: Instead of planning the entire lesson procedure, before the class, decide on a number of specific key things you hope learners will gain from the class. For each of these, decide what the "critical learning moment" will probably be, i.e., which thing you or they do (lasting no more than 30 seconds) that is likely to make the most significant impact on their success and –why. Think through each of these moments very carefully.
3. *Plan the "Critical Teaching Moments"*: Which instructions, explanations, feedback stages, etc. will be 'critical moments' for you, the teacher, which may need to be prepared in detail in advance?
4. *The Jungle Path*: An alternative approach would be to not predict and prepare so much, but to create the lesson moment by moment in class, with you and learners working with whatever is happening in the room, responding questions, problems and options as they come up, and finding new activities, materials and tasks in response to particular situations. The starting point might be an activity or a piece of material, but what comes out of it will remain unknown until it happens.

CONCLUSION

No matter what the topic is, planning before taking further steps is an important issue. When teaching is taken into consideration, planning step will include important components such as determining the aims, lesson procedure, anticipated problems and possible solutions, etc. Even though most teachers prefer to follow the coursebook, which they find safer and easier, planning at least the main structure of the lesson will be beneficial especially for teachers who are in their initial years of their teaching experience. With the help of such a plan, it will be easier for teachers to manage the time in the classroom, foresee some potential problems and come up with solutions to them.

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Chapter 58

MICROTEACHING IN ELT

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. define microteaching
2. list different roles different participants play during microteaching
3. list the major stages of microteaching
4. discuss the basic benefits of using microteaching in language teaching

STUDY QUESTIONS

1. Have you had any teaching experience before? If yes, where did you teach? Who were your students?
2. What were (might be) some problems that you may encounter while teaching?
3. Which part of teaching is the most difficult? Classroom discipline or presenting the information?
4. How would you feel when/if your teaching performance was videotaped?

INTRODUCTION

Most of the undergraduate and graduate level English Language Teaching programs offer courses in Linguistics, Language Acquisition, Approaches and Methods, Methodology and Teaching Language Skills as well as Practicum and School Practice. All of these courses provide the necessary skills and knowledge to help student teachers become skillful and adept practitioners. Usually, Practicum and School Practice courses are offered late in the program.

Until the Practicum and School Experience courses, many of the foundational courses in ELT programs do not focus on the practical aspect of teacher preparation. Microteaching, as a technique for teacher education, can address some of these problems and help the student learn the process of becoming practitioners while they are taking some basic foundational courses. It is also commonly used as a component of in-service teacher development programs for various types and stages of professional development (Kpanja, 2001). This training procedure focuses on the simplification of the complexities of the regular teaching-learning process by minimizing any of these aspects: class-size, time, task and content (He & Yan, 2011). It also adds the immediate and delayed feedback opportunity from various resources.

Microteaching

Microteaching as a structured classroom technique dates back to the 1960s. It was first introduced at Stanford University's Educational and Research Development unit. It is defined as a scaled-down, simulated teaching experience designed for the training of both pre-service and in-service teachers. It mainly aims to equip (student) teachers with the tools to attain the practice of some basic teaching skills in any given subject or skill in a controlled and relatively safe environment. It also facilitates the promotion of real-time teaching experiences (Remesh, 2013). Originally, when it was first introduced, microteaching aimed to serve three purposes: (1) as a preliminary experience and practice in teaching (2) as a research vehicle to explore training effects under controlled conditions, and (3) as an in-service training instrument for experienced teachers (Allen, 1966). However, with its development in the last 40 years, it has evolved both in shape and content.

Microteaching can help students practice some basic teaching techniques such as introducing and closing lessons, using a whiteboard effectively, questioning, giving corrective feedback, presenting specific topics, using ICT materials, applying lesson plans effectively, and so on. It can also be used to practice teaching skills such as speaking, listening, writing etc. One of the main advantages of microteaching is the opportunity for the presenter to receive immediate focused feedback just after the teaching practice. The reflection process at the end of the session has additional advantages.

Activity 1

If you were to microteach, which of the skills below would your first preference be to practice and why?

introducing and closing lessons,
using whiteboard effectively
questioning
giving corrective feedback
presenting specific topics
using ICT materials
applying lesson plans effectively

There are two different metaphors about the microteaching technique. As it is scaled down, it is usually referred as ‘teaching under a microscope’. With this metaphor, the scrutinization of every single detail of the teaching process is highlighted. It is also analogous to putting the teacher under a microscope with the idea that all aspects of the teaching process are brought into perspective for the observers to provide constructive feedback (Rao & Lakshmi, 2009). Another metaphor is the “slice of a cake”. This metaphor implies that with microteaching, we only present one segment of the whole teaching process; however we try to illustrate the overall qualities and characteristics as they are reflected in that piece.

Activity 2

Can you think of any other metaphors about microteaching? Discuss it in groups or pairs. Please also state the rationale behind it.

The Participants of Microteaching Process

The Student Teacher

The main goal of the microteaching process is for the student teacher to present in a protected environment where he/she can get feedback from various resources in a non-threatening way (including him/herself as a part of the reflective process after watching his/her own performance). Previous research on microteaching reveals that the students find it useful (Amobi, 2005; Benton-Kupper, 2001; Metcalf, 1993; Mills, 1991). The student teacher prepares him/herself for the microteaching by collecting information about the topic and rehearsing some skills. The key aspect of the preparation period is preparing a lesson plan. Without it, reaching the goals of the microteaching session would be far-fetched. The student teacher also prepares the reflection paper at the end of the session following the instructor’s and peers’ feedback.

Other Students

The other students in the class will act as the students of the lesson. They might need to pretend that they are in a different proficiency level or from a different cultural or linguistic background. The student teacher should specify the background characteristics of the class in his/her lesson plan and other students should act accordingly. As the students know that they will eventually be in the shoes of the student teacher as well, most of the microteaching sessions reported in research yielded positive environments. One key role of the other students will be the providence of the feedback at the end of the microteaching. The students should be encouraged to give feedback (both positive and negative) and can be given a rubric to assess the performance of the student teacher accurately. The rubric can be prepared prior to teaching with a discussion involving the students or a rubric can be adopted into the setting. A sample rubric taken from The Evergreen State College’s Student Teaching Rubric can be seen in Appendix A.

The Supervisor Teacher

The supervisor teacher is usually the instructor or coordinator of the course where the student teacher is practicing. S/he sits at the back of the classroom and observes the session. Generally, the instructor does not interrupt the microteaching lesson but takes notes on both

problematic and positive parts and then provides feedback at the end of the lesson. Here, the attitude of the instructor is vital in the effectiveness of the microteaching. He/she should first highlight the positive aspects of the performance and then list the problematic components by giving evidence and proposing solutions.

Activity 3 List the specific roles of the each participant below.			
Participant	Before microteaching	During microteaching	After microteaching
The student teacher	1- 2- 3-	1- 2- 3-	1- 2- 3-
Peers	1- 2- 3-	1- 2- 3-	1- 2- 3-
The supervisor	1- 2- 3-	1- 2- 3-	1- 2- 3-

Steps of Microteaching

Step 1: Orientation about Microteaching

In this step, the students are given background information about microteaching. Related theoretical background together with advantages and disadvantages of using microteaching sessions are discussed. At the end of the session, the students should understand the major differences between microteaching and making a presentation.

Step 2: Providing Theoretical Information about the Skill or Topic

In the second step, information about the skill, technique or topic that will be practiced should be introduced. In this theoretical session, the students can read about what they need to know prior to teaching their topic or skill. For example, if the microteaching session will be a practice of “Teaching Speaking”, the students should study on different aspects of teaching speaking such as theories, techniques and activities of teaching speaking.

Step 3: Providing a Model Microteaching

If the students have not conducted a microteaching session before, it would be practical to observe a microteaching session. If there is no time limitation, good and bad examples of microteaching sessions can be introduced and discussed in class.

Step 4: Preparing a Microteaching Lesson Plan

One of the key elements of microteaching is the lesson plan. The student teacher should know how to prepare a lesson plan and also should scale down the steps of the lesson plan in

order to meet the time requirements. A lesson plan template can be provided to assist the students.

Step 5: The Microteaching Session

In this video-taped session, the student teacher teaches the skill, technique or topic to her peers. The supervisor should monitor the process but should not interfere until the end of the session. The time restrictions should be followed carefully. If necessary, one of the students can be given the role of the time-keeper and inform the student teacher about the time. The Microteaching Evaluation Rubric should be distributed to the class prior to the session.

Step 6: The Feedback Session by the Peers and Supervisor

Immediately after the performance, 5-10 minutes should be allocated to the feedback session. First, the peers should be invited to give feedback. The students should be reminded about the caveats regarding giving feedback. After the student feedback session, the supervisor should wrap up the session by highlighting both positive and negative aspects. This step is video-taped as well.

Step 7: Reflection by the Student Teacher

The final step of the microteaching session is the reflection paper prepared by the student teacher. If necessary, a sample reflection paper can be introduced. In the reflection paper, the student teacher should briefly describe what she did, why she did it and if she did it well or not. She should also address the important suggestions and/or feedback from the peers and instructor. She should also address the important suggestions and/or feedback from the previous feedback session. A sample reflection paper is provided in the Appendix B.

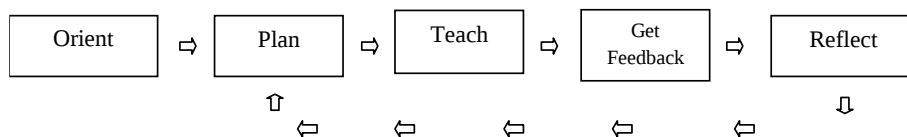


Figure 1. The Microteaching cycle.

Feedback in Microteaching

One of the strengths of the microteaching technique is the multi-channelled feedback. The student teacher gets feedback from her peers and her supervisor immediately after the session and can also reflect upon her practice after watching her performance and feedback from others. While providing feedback, as Maheshwari and Vishnoi (2011) assert, the following caveats should be kept in mind:

Be respectful, do not judge the student teacher, be polite and consider the social ties with in the class.

Start on a positive note, highlight the positive aspects first. If you start off with negative criticism, the person receiving the feedback might not even hear the positive part, which will come later.

Be descriptive and specific, rather than evaluative, clearly point out the problematic aspects. Do not say: “I did not like your overall performance” or “Your pronunciation in

general was really bad.” You can say: “You did not use the blackboard efficiently” or “You mispronounced architecture”.

Don't be repetitive, do not repeat what other people said in a negative or positive tone.

Avoid conclusions about motives or feelings. For example: rather than saying: “You don't seem very enthusiastic about the lesson”, you can say “Varying your rate and volume of speaking would give you a more animated style”.

Activity 4

What other suggestions can be given while giving feedback? Discuss it with your partner(s).

Video Recording in Microteaching

Videorecording the microteaching is an important component of the process. In some places where the technological tools are available, Microteaching Labs are used to facilitate the process. However, it is not a must. A good camcorder can be used to have a similar effect. If it is possible, a technician from the school, if not one or two students can be responsible for the recording process. The presence of the camera in the classroom might make students feel uneasy or look artificial. This is one of the major drawbacks of the microteaching session.

PRACTICAL TIPS

The following tips can be considered during the microteaching process.

- Provide a rubric for assessment if possible
- Present a video-taped microteaching session during the orientation
- Provide a sample reflection paper
- Be careful about time restrictions
- Be positive while giving feedback
- Address both effective and ineffective aspects of the performance while giving feedback
- Video-tape the whole process
- Guide the students about the feedback process

ADVANTAGES OF MICROTEACHING

Sharma (as cited in Rao & Lakshmi, 2009) summarized the advantages of microteaching as follows:

- Modification of teaching behavior
- Knowledge of teaching skills
- Developing teaching skills
- Improving teaching practice
- Individual training
- Regulating teaching practice

- Real teaching
- Reducing complexities
- Focus on teaching
- Analysing one's own teaching behavior
- Continuous reinforcement
- Research tool

CONCLUSION

The use of microteaching is a commonly used training technique worldwide. It is used in many areas such as science education, medicine as well language teaching. If properly planned and administered, it can be a very effective tool to help student teachers' transition from theory into practice. The simplification of the complexities of regular teaching process might be conducted in different components of the teaching process such as class size, time, task and content (He & Yan, 2011). With the multi-channeled feedback module, it is an effective tool of teacher development. Different adaptations of the microteaching process make it feasible in different contexts throughout the world.

FURTHER READING

More information about microteaching can be accessed from the following resources.

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APPENDIX A: ASSESSMENT TOOL FOR MICROTEACHING

Presenter's name: _____ Observed by: _____

Source of Evidence: Microteaching Observation

1. The teacher candidate aligns instruction with the plan and communicates accurate content knowledge

Teaching Elements	Criteria	Rating			
		Not present	Developing	Proficient	Accomplished
A. Alignment	Classroom instruction is aligned with the instructional plan.				
B. Meaningful Opportunities to Learn	Students are learning the key skills - concepts needed to reach the learning targets.				
C. Accuracy	The teacher candidate demonstrates accurate knowledge of the content.				
D. Interdisciplinary Instruction	Students are engaged in tasks that provide interdisciplinary connections with other subject areas.				

2. Students participate in a learning community that supports student learning and well-being

A. Respect	Classroom interactions between teacher - students reflect respect for students.				
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3. Students engage in learning activities that are based on research and principles of effective practice

A. Questioning and Discussion Techniques	Teacher answers and poses questions in a way that engages students in cooperative discussions that enhance learning, critical thinking, transformative multicultural thinking, and problem solving.				
B. Delivery and Pacing	Students engage in learning activities that are: paced appropriately for all students, culturally responsive, and				

	allow for reflection & closure.				
C. Active Learning	Students are cognitively engaged in the learning activities.				

4. Students experience effective classroom management and discipline

A. Transitions	Teacher helps students move between learning tasks or lesson segments in an efficient manner.				
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5. The teacher candidate and students engage in activities that assess student learning

A. Alignment	Students engage in assessment activities aligned with learning targets.				
B. Multiple Modes and Approaches	Students engage in various assessments that measure their performance relative to the learning targets.				

APPENDIX B: REFLECTION PAPER

The type of the activity is role-play called “Ordering Food At The Restaurant”. In this speaking activity, students make a dialogue with his/her friends based on his/her roles, which are the waitress/waiter or the customer. This communicative speaking activity is planned to make the students to use some specific structures, such as ‘I would like to have...’ or ‘Can I...’. The other aim of the activity is to provide the students with specific lexical items, such as ‘steak, waffle, doughnuts’.

The activity is also designed to improve students’ speaking fluency and self-confidence while speaking. In order to achieve this objectives, firstly, I planned to motivate my students. Since their age is fourteen to fifteen, I thought preparing some attractive materials changes the classroom atmosphere in a positive way. These materials, such as knife, spoon, bread, chicken drumsticks, give the student the chance to carry, touch the objects and pretend eating the food, which makes the task a practical and hands-on activity. These materials are the basic motivation factors in the task, which work well in my opinion.

The preparation and the presentation part are devoted to the revision part so that the student will have a clear idea about what to say and how to say. Moreover, by following the steps written on the role cards that I distributed before the task, students know what is expected to do from them, instead of what is expected to say. This gives a choice to students on their own speech.

Of 15 minutes, first 5 minutes are devoted to the revision part and organizing the students for the activity. After that students perform their roles in front of the class. Therefore, when we take the ratio of teacher talk and the students talk into account, we can see that students talk more. In this lesson, teacher is an organizer, a model, a facilitator but not a participant.

As a teacher, I also did my best to give corrective feedback to my students during the performance and while they are preparing their dialogues. Most of the feedback is an immediate one. Some of the pronunciation errors and communication breakdowns are handled in a smooth way. Furthermore, I tried to draw my students’ attention not to use their mother tongue during the task.

Finally, apart from being too fast while revising the previous topics and giving instructions because of the limited time, I think that I did my best to make student motivate to

talk. As a result, most of the students would love to come to the board and show their performance by using the object that I prepared as educational materials. Also, I think that I should be more careful while giving instructions. I should explain the task and the materials before distributing the cards. Consequently, I think I was amply rewarded by my students because what I want to do is to make my students to talk in a positive and enjoyable atmosphere.

Chapter 59

TEACHING SPEAKING IN EFL CLASSES

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. list different types of conversational rules and structures
2. list important conversational strategies
3. list important aspects of a good speaking activity
4. list different types of practical activities that can be used in a speaking class.

STUDY QUESTIONS

1. What are the differences between spontaneous and prepared talk?
2. What are some of the factors to consider in determining the effectiveness of speaking activities?
3. What are some teacher roles in speaking classes?

INTRODUCTION

What language skill comes into your mind first when you are asked to define the term fluency in a foreign language? "...people who know a language are referred to as 'speakers' of that language, as if speaking included all other kinds of knowing" (Ur, 1996, p. 120). Speaking seems to be intuitively regarded as the most important skill of all the four language skills. In fact, many language learners consider speaking as equal to the overall language competence, and they measure their language proficiency, their accomplishments and their

progress through learning based on their speaking skills. Fluency is then strongly associated with and measured by the ability to converse with others, much more than the ability to read, comprehend oral language or express oneself on a written document. In many contexts, people judge a language user 'at face value' upon speaking skill. In other words, people form judgments about our language competence from our speaking skills rather than any other skill (McDonough, 1996).

Speaking can be defined as “the process of building and sharing meaning through the use of verbal and non-verbal symbols, in a variety of contexts” (Chaney, 1998, p. 13). Speaking plays a crucial role in foreign language learning and teaching. With the internalization of English as the medium of communication, the need for meaningful and successful interactions has become more imperative than ever. Students should not only form grammatically correct sentences, but also use these sentences in appropriate social contexts taking into account the cultural background and social status of the interlocutor (the person(s) they are talking to).

Characteristics of Spoken Language

It is useful for language teachers in the classroom to consider and analyze how native speakers participate in oral interactions and what they actually do when they are engaged in conversations. Towards this end, language learners and teachers need to recognize that speaking consists of three main areas of knowledge:

1. *Mechanics*

Mechanics of a language involves pronunciation, grammar, and vocabulary. This basically means expressing oneself with the right words in the right order with the correct pronunciation.

- **Lexis and Grammar:** The nature of speech involves the use of common lexical phrases. It is highly like to use certain lexical phrases for a variety of language functions. Therefore, teachers should plan and prepare language activities in such a way that students can have plenty of opportunities to engage in communicative activities which involve certain language functions such as agreeing or disagreeing, expressing surprise, apologizing, inviting, and offering etc. It is really essential that teachers provide students with certain lexical phrases, fixed expressions and conventional routines that learners can use within certain conversational contexts (job interview, buying clothes, etc.) for a variety of purposes and functions (convincing, agreeing, etc.).
- **Expressive devices:** During conversational interactions native speakers of English resort to physical and non-verbal (paralinguistic) means in order express different emotions through the use of varying stress and pitch patterns for certain parts of their utterances. These suprasegmental features and devices are especially important in face-to-face interactions where speakers need express different emotions, change the intensity of their emotions and express extra emotions. Therefore, classroom activities should be designed to provide students with at least some of the major expressive devices to help them become effective communicators.

- **Connected Speech:** Speaking does not necessarily involve bringing together speech sounds and form words and then sentences. Speech involves a continuous stream of sounds and it is not always easy to find clear-cut borderlines between sounds and words. Effective speakers of English do not just produce individual phonemes of English but they are also able to use connected speech. In connected speech, speech sounds go through some modifications and changes such as omission, assimilation, adding or weakening of some sounds. Therefore, activities in the classroom should be designed in such a way that they help students to get acquainted with the features of connected speech, and improve their fluent, connected speech.

2. Functions

This includes transactional and interactional language use. It is basically the knowledge of using language for a variety of purposes. Language users need to know when the message needs to be clear and precise (transaction/information exchange) or when precise and exact understanding is not really essential (interaction/relationship building).

Nunan (1998) points out that listening texts and tasks can be categorized according to functional terms. For instance, news report carries out a different function from transactional encounters, and the type of language used changes accordingly. Our analyses of texts can benefit from similar considerations from the perspective of the producer rather than the receiver. Bygate (1987) describes oral interactions in terms of routines. These routines are conventional ways of presenting information and they can focus either on information or interaction. Information routines can either be expository (e.g., narration, description, instruction, comparison) or evaluative (e.g., explanation, justification, prediction, decision). Information routines frequently involve recurring types of information structures. Interaction routines on the other hand can be either service (e.g., job interview) or social (e.g., dinner party). This distinction between information and interaction routines reflects the distinction between transactional or interactional functions of language. The speaking grid by Nunan (1998) in Table 1 can be used as a planning device to design a syllabus for speaking and oral interaction.

Table 1. A planning grid for speaking and oral interaction by Nunan (1998)

		Information/Transaction		Negotiation of meaning Management of interaction
		Expository	Evaluative	
		narrate describe instruct compare	explain justify predict decide	
Interaction				
SERVICE	Job interview Booking a restaurant Buying stamps Enrolling in school etc.			
SOCIAL	Dinner party Coffee break Theatre queue etc.			

Negotiation of Language: Negotiation of language is mainly used for two purposes; to ask for clarification of meaning and to give information about the structure of language we use.

Teachers should design some activities that can help students master some clarification strategies and some fixed phrases that can help clarify what the other person is saying. The best way to teach clarification is to offer students some expression that can be used to ask the other person clarify any part of his/her speech that sounds obscure. A helpful way to offer such activities is to write some phrases, explanations and topics to be explained on cards. Some phrases and explanations on the cards can be left a bit obscure and incomprehensible so those students feel the need to make clarifications. Some example phrases that can be given to student:

- I'm sorry. I didn't catch that.
- I'm sorry. I don't understand.
- What exactly does X mean?
- Could you explain that again, please?

Second reason why we use the negotiation of language is to give information about the structure of our language. Structuring the discourse of our language is especially helpful when we want to make more written-like speeches. If you are giving a presentation to a group of people, you have to structure your thoughts and use some initiation phrases to highlight important parts of your speech and help your audience follow the sequence of your speech. This is also helpful in signaling the cause and effect relations between your arguments.

Some useful expressions or phrases that can help students to structure their discourse:

- The important thing to grasp is that...
- To begin with/And finally...
- What I am trying to say is that...
- What I mean is...
- The point I am trying to make is that...
- ... or, to to put it another way...

3. Social and Cultural Rules and Norms

This basically involves conversational rules and structure (turn-taking, rate of speech, relative roles of participants, etc.), and conversational strategies (paraphrasing, asking for clarification, use of filler, etc.). It is essential for learners to understand how to take into account who they are speaking to, under what circumstances, about what, and for what purpose and reason.

Spontaneous Communication

One of the biggest challenges language teachers face in speaking classes is to prepare appropriate communicative activities in systematic ways. More often than not, teachers draw on their intuition-based random selection of communicative activities. This often results in

failure to find effective ways to prepare students for spontaneous communication. Although there are detailed guidelines to bring real-life like communicative situations into the classroom thanks to communicative teaching methodology, the type of communicative skills and language input is not really specified. Dörnyei and Thurrell (1994) points out that although many people think informal everyday conversation is unstructured and random, all conversations are governed by certain rules. These rules determine who speaks when, and for how long. They also state that natural conversation involves fixed expressions or conversational routines. They classify these rules and routines into six categories in order to design the content of a conversation course.

Conversational Rules and Structure

Conversational rules and structure are related to the organization of a conversation, causes for possible interruptions and simultaneous talk:

1. *Openings*: There are various ways to initiate a conversation. They might come in the form of greetings and introductions (e.g., How are you? / Fine thanks. And you?), questions (Excuse me, do you know...) comments (That's a nice necklace...), general complaints (Public transportation in this city is really efficient...), and social lines (A great dinner, isn't it?). It is important to note that students can easily turn a very formal or a factual communication exchange (buying clothes in a shop) into an informal conversation using the above mentioned openings.
2. *Turn-taking*: There are underlying rules in the language determining who, talks, when and for how long. The language classroom does not give students enough chance to raise their awareness of turn-taking rules. This is especially disadvantageous for students coming from different cultural backgrounds. By using authentic video recordings and sample native talks, turn-taking ability can be developed through a systematic and conscious planning.
3. *Interrupting*: Interrupting is an important issue in turn-taking. Language user should know when, how, and how much to interrupt. Otherwise they might look rude. Therefore, students should be familiar with phrases like (e.g., *Sorry to interrupt, but... or Sorry, but did I hear you say...?*).
4. *Topic Shift*: Sometimes when we need to end a topic and start to talk about a new one, using certain conversational routines can be very helpful to make a smooth transition (e.g., *Oh, by the way... or That reminds me of...*). Or we might want to return to an earlier topic (e.g., *Going back to..., As I was saying..., or Yes, well, anyway...*).
5. *Adjacency Pairs*: Some utterances (e.g., questions, invitations, requests, apologies, compliments, etc.) ask for a certain immediate response or reaction from the interlocutor (the person on is talking to). The utterance and the immediate reaction or the response is called adjacency pairs.
6. *Closings*: People usually use a specific sequence of pre-closing and closing steps to set the basis to end a conversation (e.g., *It's been nice talking to you..., Well, I don't want to keep you from your work..., We must get together sometimes...*). Closing signals can easily be misleading in a foreign language; therefore it is really beneficial

to explicitly teach students a set of closing routines so that they can be prepared for the kinds of phrases they might encounter in a spontaneous conversation.

As we can see the above mentioned categorization of conversational rules and structure come in handy when we want to prepare language learners for real-life like situations. Taking these into consideration can set the ground for a planned, systematic lesson planning to teaching conversational skills. Activities geared towards awareness raising for fixed structures/responses and formulaic expressions can help learners increase their communicative competence.

Dörnyei and Thurrell (1994) also state that other than conversational rules and structure, conversational strategies also play an important role in spontaneous conversation where learners have to deal with communication troubles such as inability to understand a word, or misunderstanding the other person. Getting familiar with and learning conversational strategies can assist learners gain a sense of security and room for maneuver.

The most important conversational strategies proposed by Dörnyei and Thurrell (1994) are as follows:

1. *Message Adjustment or avoidance*: Depending on your language competence, saying what you are capable of saying rather than what you want to say or not saying it at all.
2. *Paraphrase*: Using a set of words to describe or exemplify an object or an action whose name you don't really know or remember. Some useful expressions are structures like *something you can... with, a kind of ..., etc.*
3. *Approximation*: Expressing what you want to convey in such a way, using different terms, that you mean as close as possible to your original message. Using 'all-purpose words' such as stuff, thing, what-do-you-call-it can be very helpful.
4. Asking for help: What's the word for...? Or What do you call...?
5. Asking for repetition: Pardon? or Sorry, what was the last word?
6. Asking for clarification: What do you mean? What are you saying/trying to say?
7. Interpretive summary: You mean?, If I've understood correctly... or So are you saying that...?
8. Checking: OK?, Is that clear? Or Are with me? Are you listening? Did you hear what I said? Or over the phone, Are you (still) there?
9. Use of fillers/hesitation devices: Well, Now let me see, or The thing is, etc.

What Does Teaching Speaking Involve for Language Teachers?

Language teachers should help their students develop areas of knowledge (Mechanics/Functions/Social and cultural rules and norms) given above. They should provide their students with ample opportunities for authentic practice. It should be kept in mind that ultimate aim of these activities should be to prepare students for real-life situations. Language teachers should also encourage their students to develop the ability to produce:

- grammatically correct (mechanics)
- logically connected sentences that are appropriate to specific contexts (Functions/Social and cultural rules and norms)
- and to use comprehensible pronunciation.

Now many linguistics and ESL teachers agree on that students learn to speak in the second language by "interacting". For interaction, communicative language teaching and collaborative plays a crucial role in that they foster information and interaction exchanges between and among learners. Communicative language teaching is designed based on the characteristics of real-life situations and they require communication. By using this method in speaking classes, students will be provided with enough opportunity to communicate with each other in the target language. Therefore, teachers should create a classroom environment where students have real-life communication, authentic activities, and meaningful tasks that promote oral language. This can happen when students collaborate in groups to achieve a goal or to complete a task. (Kayi, 2006)

Characteristics of a Successful Speaking Activity

Whatever the nature or the goal of the speaking activity is, a good, learner-centered speaking activity should involve the following qualifications:

A speaking activity where:

- learners talk a lot
- participation is equal and even
- motivation is high
- language is of an appropriate level

Problems with Speaking Activities

By its nature, speaking can be problematic and therefore difficult for language teachers. No matter how organized or involving the speaking activity is, some problems just arise on account of students. Some of the common problem that might arise during a speaking activity and some possible strategies to help solve these problems are listed below:

- *Inhibition*: Sometimes students' personalities come into play and they might feel reserved to participate in any activity.
- *Nothing to say*: Sometimes it is hard for students to comment on a topic or find ideas to put forward.
- *Low or uneven participation*: This mostly happens in crowded classes where some certain students dominate the discussions.
- *Mother-tongue use*: Particularly low-level students tend to use their mother tongue especially during group work activities where they need to talk with their peers.

What the Teacher Can Do to Help to Solve Some of the Problems?

Speaking activities should involve each and every student in the classroom through the use of group work. This also helps remove some of the responsibilities of a student gets reserved or inhibited students to talk as well. Teachers should base activities on easy language so that students feel no need to use their mother tongue. Appropriate and interesting task choice is essential for student participation. Unfamiliar topics might leave student with no idea to talk about. As a summary, the following points should be kept in mind during designing a speaking activity:

- use group work
- base the activity on easy language
- make a careful choice of topic and task to stimulate interest
- give some instruction or training in discussion skills
- keep students speaking the target language

PRACTICAL TIPS

What Makes A Good Speaking Activity?

Thanyalak Oradee suggests that speaking is the most important and essential skill (Oradee, 2012). Thus, before preparing any speaking activity, there are important points to consider in detail. The following table provides a good overview of these points.

Table 2. What make a good speaking activity

Repeatable	Can it happen only once, or will it be interesting to do the task multiple times with slight changes (e.g., new groupings, new “topic”, etc.). Repetition allows for rehearsal, refinement, confidence building, and teacher input/repair.
Structured	Is there some procedure that should be followed, some process to go through? Adults can accept speaking as an aim in and of itself, teens and kids feel better “doing something”. A structure helps support the learners by giving them aims, let’s them know what they should try to do/achieve, etc.
Open-Ended	This isn’t just the opposite of the above! Is there enough room in the task for the learners’ personality, creativity, and sense of humor – or are there only limited and “correct/incorrect” choices given them? On the other hand, does it depend on the students having creativity?
Has A Task Goal	(not a “teacher’s goal”) Related to the above item. Some “end point” also lets students know when they are done, gives them a reason to work through the task to completion.
Competitive	Is there some way to evaluate or rank the products of the task? With teens and kids competition can add motivation (and some adult groups like it too).
Reportable	Is there something to tell/show once the task is done? Can we rank individuals/groups? Will the audience have a reason to listen to the “reports” of other groups, or will they all have essentially the same thing to show/tell?
Challenging	Are the learners doing something that “pushes” them, and allows them to work at their level of ability? Is the task structured to allow for different levels of challenge/ability?
Has A Teaching/Learning Goal	Not every free speaking task needs a tight link to “newly learned language”, but can learners see a connection between the speaking task and other recent work in the course – do they feel that they are “practising” something? The goal might also be diagnostic/evaluative.

Source: Thomas Topham (prepared for tefl.net).

Awareness Raising Activities

As they lack certain skills, there are things that learners can't easily do, such as retrieving words at speed or achieving long, pause-free runs. Yet, there are also things that learners don't know such as what to say in order to signal a change of topic or how to respond appropriately to a difficult request. This results in inhibited fluency. Activities that help students uncover gaps are called awareness activities. It is assumed that the instructor will always be available to guide the event and provide support & feedback where and when necessary. Awareness concept is rooted in the cognitivist learning theory arguing that, to some extent, conscious awareness is needed in the sense of a prerequisite to restructure learner's mental representation of the language. Thornbury states that three processes are involved in this concept: attention, noticing and understanding (Thornbury, 2005). A teacher or several learners can support or contribute to these processes. To give an instance, a teacher may secure attention by sharing a humorous or strange story or a tale. Learners together form a story depending on a picture and share and convey their creation to others in the groups. This leads to attention, then to noticing and finally to understanding.

Sample Activity / Picture Dictation

This is a low preparation fun activity that works well with large classes, especially with young learners and teens. All your students' need is a blank piece of paper and what teacher needs is a little bit of imagination.

Procedure

- First of all explain to the students that they are going to do a picture dictation, that you are going to describe a picture to them and that all they have to do is simply listen and draw what they hear you describe.
- You then describe a simple and easy-to-draw picture to them and they draw it. To help you with your first picture dictation you can use the picture on the accompanying worksheet and the description below it as a guide. It is a very simple picture for a low-level beginner's class but this kind of activity can be adapted to any level of student. Simply change the content of the picture accordingly.
- When you are describing the picture it is best to describe one object at a time slowly and to repeat each description two or three times.
- Make sure you give students enough time to finish drawing one object before you move onto the next object and it is a good idea to walk around and look at the students' drawings as they are drawing them so that you can see how well they are understanding your descriptions and then you can adjust them accordingly and give them any support they need.

Tips for Making the Activity Work Well

- Before starting the activity you may want to draw a square or rectangle to represent a piece of paper on the board and elicit vocabulary from the students that they will need to know for the activity, such as in the middle of the piece of paper, in the top/bottom/right-/left-hand corner of the piece of paper, in front of, behind, on top of etc.
- For lower levels, you may even want to draw pictures of the things, the house, the hill, clouds, birds and children skipping etc. that will appear in the picture on the board before starting the activity to review vocabulary. How much pre-teaching of vocabulary and language you do will depend on the level of your students.

Variations

- Get students to colour the pictures in afterwards like a colour dictation, for example, colour the roof of the house green, colour the door of the house red, or get students to label different objects by writing the name of the object underneath it, such as house, bird etc.
- You can also get students to write a description of the picture afterwards.
- Another good variation is to give students a list of objects and get them to draw their own pictures with all those objects in them.
- The students then work in pairs. One student describes their picture to their partner and their partner draws what they hear.
- They then swap roles and afterwards they compare the pictures they drew with their original drawings pointing out the differences and usually having a giggle.
- Source: Fiona Lawtie, Teacher, Freelance materials writer

Using Recordings and Transcripts

Inside the classroom, speaking and listening are the most often used skills (Brown, 1994). Exposure to instances of spoken language is one of several ways to raise awareness of aspects of spoken language in learners and to get them to study such instances works as well. Up to now, it has been in the form of recordings including monologues and multi-person interactions. These tools are pre-scripted. The problem with recordings is that they are superficially reflecting the real spoken language due to the lack in pause fillers, repair, back-tracking, and lack in features such as interaction and turn-taking. Regarding this, R.A. Hall (1968) tells us that language is “the institution whereby humans communicate and interact with each other by means of habitually used oral-auditory arbitrary symbols”. One drawback of recordings is that they are often prepared to contain a pre-selected grammar structure and they are made simple to make sure that they are intelligible. On the other hand, one advantage of them is that instructors can insert examples of particular features that learners need to be aware of. Again, one other problem with recordings is that they are mostly native speakers who speak in them. That may sound unnatural and far from reality. Many non-native learners

may need an easier way of getting hold to English-speaking context. Besides, some contexts such as soap operas and films can be far away from intelligibility. Putting recorded data into effective practical use may require a number of factors such as; activation of background knowledge, checking gist, register, details, listening & reading, resolution of doubts and focusing on language features.

Focusing on Selected Language Features

Focusing on organization is about making learners sensitive to the aspects of spoken genres. These genres such as business presentations or press conferences may be little bit unfamiliar to learners. Language functions (or patterns) that tend to occur in certain discourse situations (e.g., declining an invitation or requesting time off from work), can be identified and charted (Burns & Joyce, 1997). Apart from this, focusing on sociocultural rules, topic shift, performance effects, communication strategies, speech acts, discourse markers, features of spoken grammar, vocabulary, lexical chunks, stress and intonation are what learners may need to touch upon to hold a better grip of a rather more effective speaking skill.

Using Live Listening

Compared to recordings, live listening bears a notable advantage of interactivity with a guest speaker or a teacher. Learners can direct questions to the speakers, can ask them for repetitions and clarifications.

Using Noticing-The-Gap Activities

These kind of activities aim to display the difference between the current level and the target competence of the language learner. A task-based instruction would best work with this activity making learners perform a speaking task, observe what a skilled person can do, and re-perform the initial task to display the difference between the initial stage and the final one.

Appropriation: Practised Control

While controlled practice involves repetition of language items with minimal mistakes, practiced control displays a progressive control of skill and, at the same time, involves mistakes that may be present all over the process, yet with a constant teacher support available all the time. Because, speech has its own skills, structures, and conventions different from written language (Burns & Joyce, 1997; Carter & McCarthy, 1995; Cohen, 1996). That means that especially a low-level learner/speaker of a language would benefit from being monitored by a skilled user of the same target language.

Drilling and Chants

Learners need to practice to get the control of speaking skill in the target language. According to Bashir, Azeem & Dogar (2011), learning to speak demands a lot of practice and attention. We learn to speak our mother tongue just by listening and repeating. Thus, imitating and repeating the structures such as words, phrases and sentences, that's, drilling is what is required to gain the management of speaking, even by trial-error process. Apart from enabling articulatory control for a speaker, drilling also moves fresh items from working memory to long-term memory. All these benefits result in fluency in the long run. Chants involve the practice of repeating and chunking more commonly than drilling does.

Writing Tasks

R.H. Robins (1979) does not give a formal definition of language but points out certain facts related to language, saying that "languages are symbol systems, almost wholly based on pure or arbitrary conventions". However strange it seems, writing has a role in the initial stages of several works aiming at speaking. These writing tasks include dictation, paper conversations, computer-mediated chat and rewriting.

Reading Aloud

Just as strange as writing feels, reading aloud is a useful tool to support any objective directed at spoken language. It is a transition between writing and speaking.

Assisted Performance and Scaffolding

Competent practitioners, according to Socio-cultural theory, make L2 learning easier and more accessible for less skilled ones through scaffolding and several other interventions.

Dialogues

Essentially, any language use is dialogic in its nature. Dialogues provide transition from a teacher-based classroom to an interaction-based/focused setting. To incorporate new language items and to provide an easy access to/for memory, a several number of tips are on hand such as items on board, chunks on cards, memorization script, picture and word cues, flow-diagram conversations, conversational tennis, disappearing dialogue and dialogue building. According to N. Chomsky (1957) a language is "a set of sentences, each finite in length and constructed out of a finite set of elements".

Communicative Tasks

As speaking is a cognitive skill, it is basically automated through practicing successively. Therefore, when tasks are communicative, they help to accomplish two crucial learning needs: preparing learners for authentic context use and automatization of their knowledge. Enhancing communicative competence and performance is realized inside and outside of the classroom setting. Conversational fluency in a new language develops inside and outside the classroom, and students can attain it in one to three years (Collier & Thomas, 1989). Jigsaw activities, info-gap race, surveys, blocking games and guessing games are among the frequently used activity types to prepare a communicative learning-teaching interaction.

Task Repetition

By adjusting elements of planning, interactivity, results, outputs and task repetition, teacher can influence the outcome of tasks. To teachers, task repetition may bear several advantages, yet, to learners, it may feel demotivating without a strong motive and incentive. To handle this shortcoming, here are some suggestive mini-activities: the onion, poster carousel, headlines.

SAMPLE ACTIVITIES

Discussion Activities

Activity 1

Good Manners

This activity is all about manners and etiquette. This can be an interesting topic to discuss with your students, especially if there are cultural differences regarding norms of behavior between the country you're working in and the UK.

Preparation

Write up two columns with headings on the board:

Good Manners	Bad Manners

Procedure

- This is a simple introductory activity to get across the idea of manners, both good and bad.
- Draw the table on the board and give students a few ideas to get them going.
- Then they should fill their table with as many examples of good and bad manners as they can think of.

- Ask students to read the statements about manners. There are three that are FALSE. See if they can find them. (The three false ones are: 3, 4 and 6.)

In the UK...

1. ... do stand in a queue when you wait for a bus or to pay for something in a shop.
2. ... don't spit on the street.
3. ... do burp loudly after a meal.
4. ... don't apologise if you bump into somebody on the street.
5. ... do say 'please' and 'thank you' at every opportunity.
6. ... don't cover your mouth when you yawn or sneeze.
7. ... don't greet people with two kisses.
8. ... don't pick your nose in public.

Once the students have finished, ask them to decide on a list of do's and don'ts for good manners in their country.

Source: Jo Budden, British Council, Spain.

Activity 2

Discussing Languages

This is a discussion activity that you can use to find out about your students' opinions of language learning and how important they think it is. It gets your students talking and sharing opinions but also gives you a chance to listen in and to understand their motivation and attitudes towards languages.

Preparation

Make a copy of the discussion statements and cut them into strips so those students can take one statement at a time and discuss it. Add some statements of your own if your students have specific language issues they may want to discuss.

Procedure

- Put your students into groups of four or five and give each group a statement.-
- Let them discuss the statement for a few minutes while you monitor and feed in any language they need.
- Then rotate the statements around the groups.
- Once all the students have discussed all the statements you might want to have a class vote to see what the consensus of opinion is on these statements and share some of your own opinions and insights.

Discussion Statements

Everybody should speak at least two languages.
In the future there won't be so many different languages in the world.
Tourists in my country should make an effort to speak my language.
Life would be easier if all countries spoke the same language.
I think learning languages is really important these days.
Girls are normally better at learning foreign languages than boys!
If languages disappear, different ways of thinking also disappear.
I would like to know more foreign languages.
Some languages are more important than others.
English is an 'international language'.
Knowing foreign languages helps you to get a good job.

Source: Jo Budden, British Council, Spain.

Problem Solving/Task-Based Activities

Activity 3

Change Place, Change Face

This activity gives students maximum speaking time and helps develop fluency. The slightly 'unusual' classroom set-up seems to encourage students to speak, producing a healthy buzz and fostering a positive learning environment. I've found it can be a good option for classes with shy students, or groups who have become bored with traditional pair-work activities. Requiring only minimum preparation and just a little moving around of furniture, this activity can be used with learners at all levels.

Preparation

You will need a list of 8-10 questions which encourage your students to speak about themselves/give their own opinions, and which could be discussed for a few minutes each. You should also think about how to arrange your classroom so that students are sitting in rows lined up to face another row, with enough room for them to get up and change places.

Procedure

- I arrange the classroom so that chairs are lined up in a row with another row directly facing them. Space permitting, I put all the desks to one side, though this isn't essential. Large classes can be set up with several sets of rows.
- I ask students to find a seat. For an odd number of students, I add an extra chair at the end of one row, making a 'threesome'.
- I explain to students that they will have a chance to speak with different students and to develop their fluency. They will discuss the question on the board for several minutes until I say 'change'. They will then get a new question and also change

partners. To change, students in one row stay in the same place, whilst those in the opposite row move along one space every time.

- I write the first question on the board, reading it aloud if not all students can see it, and ask them to start speaking. Soon everybody is engrossed in conversation, finding ways to communicate with their partner, despite all the surrounding noise.
- After two/three minutes, I tap on the board and ask students to ‘change’. Students on one row each move down a seat, with the person in the last position moving back up to the top of that row.
- Students ‘greet’ their new partner as I board the next question, and then start speaking again.
- In my experience students are happy to keep talking, and it is up to the teacher how much speaking practice s/he feels the students need and how many questions to give. Twenty minutes is usually appropriate.
- Whilst they are speaking I listen to/observe individual learners from the back of the room. I don’t get involved in the conversations; however, if I see that students don’t have much to say for any particular question, I move onto the next one, though this rarely seems necessary.
- At the end, I do a short feedback session, for example asking students which question they most enjoyed discussing. Feedback could also focus on error correction, an opportunity to pick up on problems common to several learners.
- For teachers with access to an OHP, an alternative to boarding each question is to prepare the questions on a transparency to be projected, using a piece of card to ‘unveil’ one question at a time.

Source: Marta Joyce Sabbadini-Essinki, Teacher & Trainer.

Activity 4

Task-Based Speaking

This is a speaking lesson on the theme of planning a night out that uses a listening exercise to provide language input.

Preparation and Materials

You will need to record two people planning a night out on the town.

Pre-Task (15-20min)

Aim: To introduce the topic of nights out and to give the class exposure to language related to it. To highlight words and phrases.

- Show sts pictures of a night out in a restaurant / bar and ask them where they go to have a good night out.
- Brainstorm words/phrases onto the board related to the topic: people / verbs / feelings etc.
- Introduce the listening of two people planning a night out. Write up different alternatives on the board to give them a reason for listening e.g., (a) restaurant / bar (b) meet at the train station / in the square. Play it a few times, first time to select from the alternatives, second time to note down some language.

- Tell them that they are going to plan a class night out and give them a few minutes to think it over.

Task (10min)

Students do the task in twos and plan the night. Match them with another pair to discuss their ideas and any similarities and differences.

Planning (10min)

Each pair rehearses presenting their night out. Teacher walks around, helps them if they need it and notes down any language points to be highlighted later.

Report (15 min)

- Class listen to the plans, their task is to choose one of them. They can ask questions after the presentation.
- Teacher gives feedback on the content and quickly reviews what was suggested. Students vote and choose one of the nights out.

Language Focus (20min)

- Write on the board five good phrases used by the students during the task and five incorrect phrases/sentences from the task without the word that caused the problem. Students discuss the meaning and how to complete the sentences.
- Hand out the tapescript from the listening and ask the students to underline the useful words and phrases.
- Highlight any language you wish to draw attention to e.g., language for making suggestions, collocations etc.
- Students write down any other language they wish to remember.

Note:

You can go on the planned night out with your students. This can make it even more motivating for them.

Source: Richard Frost, British Council, Turkey.

Story Telling Activities**Activity 5****Talking about the Past**

This speaking activity is for a 1-1 class with a learner at an intermediate level and who works, as many of the questions ask for reflection about working life. It could be adapted for use with a group but would need some very close monitoring and support from the teacher. The learning aims of the activity are to review and provide further practice in various ways to talk about the past, including past continuous, two perfect forms, used to and expressing past regret (I wish I hadn't...). This could also be used as a diagnostic for a higher level learner.

Preparation

Before the class, prepare a copy of the questions for yourself and your learner. Remember you can also explain the activity's aims and procedure to the learner at a more detailed level than you would with a group.

Procedure

1. Ask your learner to answer the questions first – this could be done in note form (which will focus on speaking more) or as full written answers.
2. Ask the learner to share their answer for each question. Encourage discussion of their response but don't correct at this stage.
3. Ask the learner to ask you the same question, then record your answers. Encourage discussion of your response also if the learner is interested.
4. If one of your aims is accuracy, give the learner time to correct their answers using yours as a model, then give feedback. If the learner is interested discuss and develop the language points more explicitly.

Or (for a lower level)

1. Ask your learner to ask you the questions first and record your answers. This is slightly less demanding and provides the learner with a model before writing. Encourage discussion of your response if the learner is interested.
2. Ask your learner to answer the questions referring to yours as a model – this could be done in note form (which will focus on speaking more) or as full written answers.
3. Ask the learner to share their answer for each question. Encourage discussion of their response but don't correct at this stage.
4. If one of your aims is accuracy, give the learner time to correct their answers using yours as a model, then give feedback. If the learner is interested discuss and develop the language points more explicitly.

Source: Paul Kaye, Teacher, Writer, Trainer.

Activity 6

Story in a Bag

This oral story-creating and relating activity works best with intermediate level and above learners. (I don't recall the origins of this activity. I picked it up from some book or workshop at least ten years ago!)

Preparation

Before class, the teacher fills paper bags with 5-6 random objects. You'll need one bag per group of four students. To make this activity interesting, the objects should be diverse and unrelated to each other. Go for a combination of the unusual and the mundane.

An example of a diverse content bag from my class is:

- a postcard from Singapore
- a can-opener
- a candle

- a surgical mask
- a theatre playbill (programme)
- a teddy bear

Procedure

At a signal, each group of students opens its bag, removes its objects and invents an oral story incorporating all the objects found in the bag. The stories become very complex and creative in order to make each object a step in the plot.

Here's an example based on the bag items described above.

"One morning Shelley received a postcard from her old college friend, Louise. The card was from Singapore, and in it, Louise had invited Shelley to come for a visit. Shelley flew to Singapore and met Louise. The first night she was there, they went to a play at a local theatre. It was a murder mystery and the ladies were feeling a bit nervous walking back to Louise's home after the show. When they got home Louise tried to turn on the light, but there was no electricity. She lit a candle andetc."

- It's important that the story be oral and not written and then read. This allows spontaneous changes, and for group members to jump in and correct each other or add details in the final telling.
- When the groups have finished, each group shares its story with the whole class. Each student in the group should tell one part and hold up the related object when it is mentioned in the story.
- Some group members may tell two parts, or tell one part that uses two objects - it doesn't matter. Most of the talking is done in the creation of the story within the group.

Watch out for those clever souls who would say "Shelley packed her suitcase for Singapore. In it she put a candle, a can opener, a teddy bear...etc."

Variation

- The teacher makes up a crime that has been committed, for example; 'Professor Whatsit found dead under a picnic table, Lady Wigglebiggle's diamonds stolen from her bedroom drawer'.
- The groups are then told that the items in their bags are clues to the crime collected by a detective. The story that the groups come up with then are the details of the crime. Here is an example.

"The teddy bear had been ripped open, to reveal a hiding place. It was now empty. The detective realised it was the place where Professor Whatsit kept the key to his secret laboratory. But how had the killer made it past the guard dogs? The can opener left on the kitchen counter was analysed and found to contain traces of dog food. Clearly, the killer fed the dogs, maybe even drugged them to keep them calm etc."

Source: Maria Spelleri, Manatee Community College, Florida, USA.

Communication Activities

Activity 7

Conversational English

Preparation

Take the script of a dialogue and blank out one half of the conversation.

Procedure

1. Hand out a gapped version of dialogue with only Steve's utterances showing and Sharon's blanked out.
2. Get your students to try to write in Sharon's lines using the clues given in Steve's subsequent respective answers.
3. Play the dialogue and get the students to compare what they hear with what they have written.
4. Give them some feedback. They may not have predicted what the speaker said exactly, but they may have given some good possible answers, so be sure to acknowledge that.
5. Write some keywords from each part of the dialogue on the board

Example:

Sharon: "...you?"

Steve: "I.... You?"

Sharon: "I.... What....?"

Steve: "Not....Busy....We....I....go...."

Sharon: "...That....When....?"

Steve: "....week....know."

Ask the students to listen again then work in pairs to rehearse and act out the dialogue.

Source: Elisabeth Boeck.

Role-Play / Acting from a Script Activities

Activity 8

Consequences Role Play

Why not play a game of consequences with a difference, where students must take on the role of another person?

Procedure

Give each student a piece of paper. On this they must first write:

1. The first name of their favourite movie star - male or female but of the opposite gender to themselves

2. Their favourite fruit
3. A number between 1 - 9
4. The names of vegetables - the same number of vegetables as the number given above
5. A job they don't like
6. Their favourite job they would like to do
7. A description of their dream house e.g., by the sea, in the mountains - using adjectives to describe this place
8. Finally, they describe what country they would really like to live in.

Now they are required to change character to the person they have described on the piece of paper. Here are what the points above mean:

- This is their husband's or wife's first name
- This is their family name
- This indicates the number of children they have
- This indicates the children's names
- This is their job
- This is the their husband's or wife's job
- This describes the family house and tells the listener where it is located
- This last point tells us what country they come from.

Students read through the points and now are told they are at a party where they are meeting famous people. Now they must introduce themselves to several people in the room as this person. They need to share the conversation, so they need to be interactive and find out about other people in the room. It may help to put them in small groups or allow them to walk around the classroom. You could follow this up by getting students to say who they felt was the most interesting person they met and why.

Source: Margot McCamley, Oman.

Activity 9

A Shopping Role Play

This activity gives learners at an intermediate level and above the opportunity to use interactional language in a role-play situation

The task of going shopping along a typical British high street. Half the class have shopping lists and the other half own a shop.

There are five shops:

- a computer shop
- a newsagent's
- a fruit shop
- a small supermarket
- a language bookshop.

The cards are structured so that some discussion and negotiation is necessary to find most of the things on the learners' shopping lists. In addition, each list also has a short task typical of normal interaction in the street, for example asking the time or directions to a bank. At higher levels learners can be encouraged to elaborate on the conversations and make them more complex.

Preparation

Before the class, copy and cut up the cards on worksheets A and B, so that there are an equal number of shoppers (worksheet A) and shop owners (B). The ideal number is five of each, you can duplicate the cards if your class is larger than 10. If you have less than 10, your learners won't be able to find everything on their lists, so warn them.

Procedure

- If you are practising language, review useful structures with the class first, e.g., *'I'm looking for a...'*, *'I wonder if you can help me, I...'*, *'How much is that?'*, etc.
- Hand out the cards to the students making sure there is an equal number of shopping lists and shops.
- Give the learners time to read their cards and ask you about any problem language. They also need to think about what they are going to say, and what language they will need. You can group the shoppers together and shop owners together to do this.
- Point out to the shop owners that they may need to decide how much their products cost before starting.
- Set up your classroom to represent a street, with each table being a shop if possible. Ask the learners who own a shop to prepare a card (folded piece of paper) saying what shop they own.
- Start the role-play. The shoppers need to find everything on their lists and complete their short task also.
- Monitor the activity for interesting language or for problems, which you can feedback afterwards. Try not to intervene too much at this stage.
- Keep the role-play going until enough shoppers have completed their tasks.
- Put the class into groups and ask them to explain how the shopping (and selling) went, and what problems they had.
- Feedback open class on any interesting language points.

By Paul Kaye, British Council

SAMPLE LESSON PLANS

Lesson Plan 1

WEIRD MUSEUMS	
Introduction	Practicing word building & word families
Goals	To extend vocabulary by practicing forming new words from stem words
Materials	Written text samples. PowerPoint slides.

Teaching Modes		Group work, lecture, classroom discussion
Time		45 + 45 (90 minutes approximately)
Procedure	Pre	1. Put students into teams of four to six to play a brainstorming game. Play 'for real' with a few other words. Here are some suggestions: photo happy friend organize luck
		2. Divide students into two groups, A and B. Give each student in group A a copy of worksheet. Students take it in turns to read out the other student's complete text from the bottom of their worksheet. Students stay in their pairs and discuss which words were the trickiest in their texts.
	While	3. They work together in small groups with the same worksheet to do the exercises.
		7. Now put students into pairs again, A and B. They exchange worksheets, and using the answer, they correct them.
	Post	8. Students work in small groups. They choose one of the four museum texts and look at the 'answers'. Then they brainstorm all of the possible words in each of the word families. When they finish, they should swap their lists with another group. Then each group checks the words in a dictionary and awards one point for each correct answer. The group with the most points wins!

Lesson Plan 2

ONLINE SAFETY		
Introduction		Talking about the use of internet & online safety
Goals		To develop students' speaking, listening, reading skills To develop students' awareness of online safety issues
Materials		Written text samples. PowerPoint slides, videos
Teaching Modes		Group work, lecture, classroom discussion
Time		45 + 45 (90 minutes approximately)
Procedure	Pre	1. Display some images of online logos, e.g., Facebook, Twitter, Whatsapp, Amazon, YouTube. Can your students identify them?
		2. Tell students about how you (or a family member or friend) use the internet, social media and your mobile phone. For example; sending emails, texts, using facebook, twitter, buying things online
	While	3. Choose one of the videos to show to your class
		4. Students do the pre-viewing vocabulary task before they watch.
		5. Ask the students to watch the video and to decide with a partner what the main message of the video is.
		6. Students check the UK online safety instructions booklet
	Post	7. Students discuss the booklet in small groups, and ask each group to report back to the class, summarising their discussions. In groups, students make posters with their top tips for staying safe online. You could display the posters and have a class vote on the poster with the best advice.

CONCLUSION

One of the best ways for learners to differentiate themselves is by having consistent performance regarding communication skills. Developing these skills requires a crucial amount of attention and effort by learners on speech part which is one of the core elements in any language system. That is why speaking skill composes the biggest burden along the

process to reach a native-like aptitude or a competent user level. The same is true of any of four skills. Yet, the intent here has been to present positive suggestions to help teachers and learners to develop or enhance their speaking skills by means of situation-appropriate activities. This chapter will assist both teachers and learners to improvise the good ones of the activities and to avoid duplicating the mistakes of the bad ones. In students' minds, the ability to speak a language is equal to knowing the language. Regarding this statement, Nunan (1991) wrote, "success is measured in terms of the ability to carry out a conversation in the (target) language." Taking this into consideration, when students cannot speak the language in the classroom setting, they may easily lose their motivation and interest. However, right speaking activities in the right time and in the right way will definitely lead to an enjoyable and beneficial learning environment.

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Chapter 60

TEACHING LISTENING

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. list the sub-skills of listening,
2. list the stages of a listening lesson,
3. mention the aims of each stage,
4. give sample activities for pre/while/post-listening stages,
5. explain the differences between extensive and intensive listening,
6. list some activities that can be used with songs,
7. list some activities that can be used with films.

STUDY QUESTIONS

1. Why do we teach listening?
2. What are the stages of a listening lesson?
3. What are the aims of the stages of a listening lesson?
4. What activities can be done in each stage?
5. What activities can be done using songs?
6. What activities can be done with films?

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INTRODUCTION

Listening is one of the basic skills because it is essential for communication. For Doff (1990, 198), if we want to improve speaking skills, or conversational skills, we need to develop listening skills; students need to understand what they hear. This can be achieved through listening to enough English at normal speed. Unless we are teaching English at a country where it is spoken, we need to give students plenty of opportunities to listen to English in the classroom.

Some people believe that listening is neglected in language teaching since it is seen as a normal reflex. “In reality, listening is used far more than any other single language skill in normal daily life. On average, we can expect to listen twice as much as we speak, four times more than we read, and five times more than we write (Rivers, 1981 in Celce-Murcia, 2001, 70). There are other studies which show the importance of listening. One of them was conducted by Wilt and it goes back to 1950s.

In this study it was found that 45% of communication was listening, 30% speaking, 16% reading and 9% writing. In another older one, Rankin (1928) found that 70% of waking time was spent communicating. In short, all these studies highlight the importance of listening and communication in English language learning. It is believed that when learners listen to authentic English video and audio materials for a long time, they can produce better sentences more quickly than learners who do not do so. This is very important for learners who are learning English in non-English-speaking countries. To illustrate, when students listen to dialogues, discussions, debates, interviews, etc., they can practice the content of various topics and vocabulary by hearing the way people speak in real life. Another useful practice can be discussing issues after listening to texts or programs in English (Shelby, no date).

To sum up, through listening, learners can modify the things they hear, and by imitating, they can learn certain structures, vocabulary items, pronunciation, and speaking skills can develop. Psychologically they will feel better and more comfortable when listening than when speaking, because they do not produce anything but just receive input.

IMPORTANT ISSUES AND FREQUENTLY ASKED QUESTIONS ON LISTENING

1. Extensive vs. Intensive Listening

In extensive listening students are asked to choose some listening materials for themselves to listen outside the class hour. The aim is just for pleasure (Harmer, 2007). When the students are engaged in extensive listening outside the classroom, they should be encouraged not to worry if they do not understand everything.

In intensive listening, which is done inside the classroom, the students do not have to understand everything, either. The aim is to complete the given task, graded according to the students' level. Sometimes teachers complain about the difficulty level of the authentic listening texts given in coursebooks. In this case, the teacher should be aware that they can change the task given in the coursebook, to suit the students' level. For example, let's imagine that the students are going to listen to the weather forecast. If the students are A1, their task

could be to note down the numbers or the city names they hear. To sum up, whether you have a difficult listening text or not, it is not important. The level of the task is important.

2. Bottom-Up and Top-Down Approaches to Listening

According to bottom-up approach, “listening is a linear, data-driven process” (Nunan, 2002 in Richards and Renandya, 235).

The listeners will be able to understand the spoken message as long as they know how to decode the text. This is a linear process because phonemic units make words, which make phrases and then sentences are formed. Meaning comes in the last position. In the other, top-down approach, meaning comes first. The listener uses different clues to get the meaning out of what he/she hears. The clues can be listener’s background knowledge of the text, the situation that the listening takes place, the speakers and their relationship with each other and with the situation at hand. For Nunan (2002), when teaching English, both of them should be used because the learner needs to be able to identify both the individual sounds and also get the general message.

3. How Many Times Should Students Hear the Text?

Another issue is the number of times we are going to let the students hear the text in intensive listening. For Ur (1996, 108), in real life we rarely have repetitions; however, in an everyday conversation we can ask for clarification; moreover, we aim to have the students to hear English over and over again. We can say that there is no danger in having students to listen to the text two or more times. If we can give them a different task for each listening, it will be better.

4. What Strategies Do Students Use to Cope with Listening?

Kaplan (2002, 42) mentions the use of three groups of language learning strategies: “metacognitive – planning, regulating, managing, etc., cognitive – those that facilitate comprehension, such as conscious use of context or background knowledge, and social and affective – for example, requests for clarification, and positive self-talk.” Studies have shown that listening strategy training has positive effects on the development of listening skills.

5. Anxiety Makes Concentration Difficult. How Can Teachers Overcome Anxiety?

Students usually find listening difficult. They are generally afraid of missing important details in listening tasks. In this case, the teacher should give importance to the activities done before listening. For example, they can give some information about the text and prepare the

students as much as possible. Some teachers spend plenty of time doing pre-listening activities so that students feel relaxed.

6. Learners Are Unfamiliar with the Topic or Culture. What Can Be Done?

Cultural differences might cause students to get confused. However, if teachers give information about the topic and the culture, they will be familiarised with it and want to listen to the text.

7. Learners Lack Motivation and a Reason for Listening. What Can Be Done?

The aim of the pre-listening activities is to give students reasons to listen. If enough time is allotted on them, it will be a valuable investigation.

8. Learners Get Overloaded by the Quantity of Information. How Can Teachers Help Students about This?

Sometimes listening texts in coursebooks are very long. After some time students lose concentration and have difficulty following the listening. Teachers can divide the text into parts and make them more manageable. In this way teachers will have fewer bored students and less discipline problems.

9. There Are Lots of Distractions and Students Lose Concentration. What Can Be Done?

In real life it is not possible to get rid of noise altogether. Students should be taught to listen without being distracted by the noise. If they can learn to listen in spite of the noise, then they will start developing listening as a skill. We can give airports as an example, neither the crowd, nor the noise can stop us from listening to the details about our flight since as soon as we hear our flight number, we will concentrate on it and try not to miss it.

10. Learners May Not Have Enough Grammar or Vocabulary. How Can Teachers Help Them?

Sometimes listening texts include unknown vocabulary and grammatical structures. In such cases teachers should look at the tasks students need to do. If the students need to know the grammatical items or new vocabulary items to do the task properly, those should be taught before the listening. If they are not necessary, they can just be neglected.

SUB-SKILLS AND AIMS IN LISTENING

Below are the sub-skills and/or aims that are frequently used by language teachers. The most frequently used sub-skill is to listen to the text and get the gist or the main idea(s). This is generally the aim of the first listening. The rest are the aims of the second listening, for example, listening for specific information. In this one, teachers sometimes give sentences to be filled in or questions to be answered. They can be true-false, multiple choice or open-ended questions, etc. The sub-skills to be developed might differ according to the learners' levels. For instance, while making inferences or drawing conclusions are suitable for higher level of students, listening and giving physical response is suitable for lower levels.

Another one is guessing the meaning of unknown vocabulary from the context. For this one, the students can be given a list of words and they can write or match the opposites or synonyms of them or they can be given definitions and write the words while or after listening.

Listening and taking notes is suitable and useful for students at higher education, especially if the medium of education is English. Sub-skills, such as; listening to check if your answers are right or wrong and listening to check for mistakes are used to encourage students to make guesses first and then listen to the text to see if they were right or wrong. These can be used with lower level students.

Similarly, listening for dictation, listening to re-order a jumbled dialogue, listening to complete a picture, listening to other learners and listening to match pictures with descriptions can all be used with students from lower levels to higher levels.

STAGES OF A LISTENING LESSON

There are three stages of a listening lesson: Pre-listening, while / in-listening, and post-listening.

1. Pre-Listening Stage

This is the stage done before the listening takes place. If we just ask the students to listen to the text, they might not listen or they might not be motivated or interested enough to listen or even if they are interested and eager to listen, there might be other distracters; such as, unknown vocabulary or structure, lack of background knowledge on the topic. In short, in order to motivate the learners to listen, to give them a reason, to arouse curiosity in students, to increase their creativity, to get their attention and increase concentration, and to clarify any unknown points, teachers should apply some pre-listening activities.

1.1. Activities for Pre-Listening Stage

1. The teacher chooses some key words, five or six, from the listening text and writes them on the board and asks the students to guess what the topic of the listening is, or the students can create a story by looking at these words, later they can listen to check the similarities and differences between their stories and the original one.

2. The teacher writes the title of the listening passage on the board and asks the students to guess what the passage is about and what the details can be. As in the previous activity the students will listen for similarities and differences.
3. The teacher tells the topic of the listening passage and tries to elicit some information on it. The aim is to see where the students are so that teacher can decide whether students need help or not. When the students do not know anything about the topic, they cannot follow the listening text.
4. Another option is to give photos/pictures related to the topic and asking the students to make up a story by using them. Later they can compare their stories with the original one.
5. The teacher can give a few topic sentences and ask the students to make predictions, etc.
6. Students can be given some questions to answer, and while listening, they can check the answers.

2. While-Listening/In-Listening Stage

In this stage the students do the tasks or activities while they are listening to the passage. Some of the aims might be to help students to get the meaning, to check comprehension and to help them to have fun and enjoy listening, etc.

Some theorists believe that the students might be distracted and lose concentration when they have to do some activities during listening and they cannot understand anything. They suggest that pre and post activities should be given more time than while-listening activities.

2.1. Activities for While / In-Listening Stage

1. Asking comprehension, true-false or multiple-choice questions.
2. Asking the students to listen for more detailed information.
3. Asking the students to complete the missing information in the tables.
4. Listen and match type of activities; for example, matching the definitions with words, the pictures with parts of the story, etc.
5. Listen and draw (the first scene, the last scene, etc.)
6. Listen and write the missing words in the paragraphs.
7. Listen and correct (the sentences, the words, etc.), the teacher gives the transcript of the passage but change some parts of it and asks the students to listen and correct them.
8. Listen and put into order; the teacher can give some sentences from the passage and ask the students to put them into order, instead of sentences, pictures or paragraphs can also be given.
9. Listen and act out the story, this can be a kind of ‘Total Physical Response’ activity, in which students perform some actions; such as, raising hands, waving, shaking hands with the person next to them, etc.

3. Post-Listening Stage

In this stage, the aims are to get feedback, to see if teacher has achieved his/her aims, to relate what they listen to real life, to teach and test vocabulary, etc.

3.1. Activities for Post-Listening Stage

1. Draw the last scene; this works very well especially with young learners since they like drawing pictures.
2. Summarize the listening text; this can be done as a writing or speaking activity.
3. Correct the sentences; this can be done as a while/post activity.
4. Find a suitable title; after listening, the students can discuss what they have understood from the text and in pairs/groups, suggest a suitable title.
5. Change the end of the listening text; the students can alter the passage in any way they like; in pairs/groups, they can either change the end, or chose a part of it to change.
6. Finish the story; when the passage reaches the end, stop the recording and ask the students to guess the end in pairs/groups, and then listen and check the similarities/differences.
7. Act out the story; when the listening is over, and if the teacher makes sure the students have understood the text, the students can be asked to perform role-plays.
8. Write a dialogue about what you have heard; in this activity, the students turn the passage into a dialogue form first and then act it out in pairs/groups.
9. Retell the story to your friend in pairs; this is a useful speaking practice activity. If the teachers can have half of the class outside, the other half can listen to the first part of the listening passage, later, the second part can be listened to by the first half. This will create information gap between the first and the second halves. Students from each half can come together and tell their parts to each other.

A GENERAL PROCEDURE OF A LISTENING COMPREHENSION ACTIVITY

1. Set the scene; for example, tell the students what they are going to hear, give brief information.
2. Relate the topic to the learners' own knowledge/experience; to illustrate, elicit from students whatever they know about the topic.
3. Pre-teach essential vocabulary, select some key words and teach them.
4. Give instructions; these are determined according to the type of activities the students are supposed to perform; such as, listening and drawing, correcting mistakes (refer to the activities listed in 'activities for each stage' part).
5. Tell the learners how many times they are going to hear the text; usually they listen for two times but it depends on the teacher's aim.
6. Set the listening task; give students the activity.
7. Learners listen and do the task.

8. Check that the learners are completing the task; while students are busy completing the activity, walk among the students, help and monitor them.
9. Check that the learners have performed the task satisfactorily; in other words, make sure they have all completed the task.
10. Get the learners to compare their answers (in pairs/groups). This is very important because when we skip this part, we elicit the answer from one or two students only. However, when they check the answers with their peers first, they have a chance to check the answer with a friend before speaking in front of the whole class and the teacher. In this way, not only more students will speak at the same time, but also shy students will gain more confidence.
11. Get the learners to agree / disagree with answer(s) – (open class); get feedback from students, make necessary explanations, etc.

SAMPLE ACTIVITIES

1. Giving students semi-scripted simulated authentic prompts, asking them to do role-play and record their dialogues. In the semi-scripts the students are given ideas to speak about. In this way, they will hesitate less and speak more (Lam, 2002).
Example activity:

Student A

Tell your partner what you do to be successful at school.

Use the following clues:

- a) Ask what he/she does about being successful.
- b) Ask if he/she wants to do other things.
- c) Ask if there are things he/she cannot do.

Student B

Talk to your friend about being successful.

Answer his/her question and keep talking

- a) Ask what he/she does about being successful.
- b) Ask about his/her opinion of the importance of being successful.
- c) Ask if there are things he/she would like to do.

Later, the students can listen to the recordings from other pairs and discuss what they have listened.

2. The teacher asks students to list the topics they would like to talk about. They write the list on the board. Later, students sit in groups.

Each student chooses one topic and speaks about it for 3-5 minutes without mentioning the topic. The other students in the group have to listen carefully and guess which topic he/ she is talking about.

USING FILMS IN THE CLASSROOM

It is a known fact that watching films builds the stamina, learners' ability to understand bigger chunks of language. For Stempleski and Tomalin (2001, 1), "the value of film as a language teaching and learning resource is self-evident. It is motivating, and it provides a source of authentic and varied language.

Many films are well-known, and some are recognized worldwide as a common frame of reference. The medium of film is excellent at communicating cultural values, attitudes, and behaviours. It is very effective at bringing the outside world into the classroom and providing a stimulating framework for classroom communication and discussion."

The following techniques are suggested by these writers:

1. Vision on/sound off: In this technique, the students are encouraged to make predictions on the language spoken and focus on explaining what they see.
2. Sound on/vision off: After the students listen to the soundtrack, they can make predictions on setting, scene, characters, what they are doing, etc.
3. Pause-frame control: Teachers can pause at various times and for various reasons; for example, at the beginning of a dialogue, teacher can pause and ask students to predict what the characters are going to say or teachers can ask students to tell each other what has happened.
4. Sound and video on: Teachers can give various tasks to students; such as, asking students to act the film out before watching and then compare their version and the film, or students can be given the sequence in mixed order and put them into order, this can be done before or after watching.
5. Split viewing: In this technique the students are divided into two groups; one group watches the film sound off, the other only hears it but does not watch it. After that, various information gap activities can be done; for example, members from each group can come together describe each other what they have watched or heard, or students can ask questions to each other to predict the missing part, etc.
6. Jumbled sequence: Teachers can divide the film into parts and show it to students in mixed order. In groups students can discuss to find the right sequence.

USING SONGS IN THE CLASSROOM

Teachers should use songs in the classroom for a couple of reasons because songs:

- are easy to remember,
- encourage listening,
- provide variety and fun,
- motivate students,
- can be used to teach culture,
- can relax a tense atmosphere,
- encourage creativity,
- include real language,

- stimulate discussion,
- present vocabulary in context,
- practice grammar items and
- are up-to-date, etc.

Activities with Songs

1. Giving pictures related to the events in the song and asking students to put them into order,
2. Giving the lyrics with blanks and asking students to listen and find the missing words,
3. Giving the lyrics with some incorrect words, and asking students to listen and correct the mistakes,
4. Giving the lyrics with some additional words, and asking the students to listen and cross out the extra words,
5. Asking students to discuss the events in the song,
6. Asking the students to act out the story in the song,
7. Using the song to practice grammar items, asking students to explain their meanings, etc.,
8. Giving some definitions / synonyms / antonyms of the words, and asking students to listen and find the related words,
9. Asking the students to compare their feelings with the singer's and discuss in groups, etc.

CONCLUSION

In this chapter we have stressed the importance of listening comprehension, the sub-skills of listening that teachers need to develop, theoretical and practical sides of listening comprehension, various activities to be used at different stages of a listening lesson and also a ready-made lesson plan which can be used in the classroom without any preparation.

We have also stressed the importance of using songs and films to practice listening and provided the readers with tried and tested fun activities. One last word from the author could be to stress the importance of integrating skills. As the reader can easily realise that in the activities mentioned in this chapter, we have used other skills; namely, reading, writing and speaking, just as we do in real life. We always use them in an integrated way.

A SAMPLE LESSON PLAN

Pre-Listening

Activity 1. Pre-teach some vocabulary items.

Ask one student to draw a picture of a rose and a spirit on the board.

Explain the meaning of thorn (show it on the picture of the rose)

Explain the difference between spirit and ghost. (Spirit is more abstract, ghosts can be good or bad, seen or heard, like father's ghost)

Write the two words on the board: 'trod – tread – trodden: stand on (you can act it out as well) and dismal: an unhappy, dark, miserable place'.

Activity 2. Ask the students: "Have you ever read / heard a story of a spirit / a ghost? Seen a film?, etc. Can you tell your friend near you?" (Students talk to each other in pairs, for 10 minutes). Later, get feedback.

While / In-Listening

Activity 3. Tell the students: "You are going to listen to an African folk tale. While you are listening, fill in the table":

Where?	From whom?	Took what?

Tell the students how many times they are going to hear the story.

Read the story, students do the task.

The Text to Be Read

African Folk Tale

A spirit went to his father and said:

'Father, I want to be alive.'

'That is complicated,' his father told him.

'To be alive you must first think, next you must remember, then you must feel, then smell, after that you must see, next hear and finally when you can do all these things you'll be alive.'

'How can I do this?' the spirit asked.

'Go and walk in the world,' said the father, 'and get what you can where you can.'

The spirit followed a path through the forest of the world and met a young man. The man sat under a tree and frowned.

'Man,' said the spirit, 'please help me, I want to think.'

'To think you need a mind,' said the man.

'Can I have your mind?', asked the spirit.

'Certainly,' said the man and after he gave away his mind he looked happy and young.

'Oh Father, help me,' the spirit suddenly cried in fear.

'Walk on through the world,' his father said, 'he who thinks also fears.'

The spirit came to a village and found an old man.

'Man,' said the spirit, 'please help me, I want to remember.'

'To remember you need a memory,' said the man.

'Can I have yours?' asked the spirit.

'Certainly,' said the man and after he gave away his memory he looked happy.

The spirit looked at the path ahead but could not remember which way to go.

‘Oh father, help me,’ he cried. ‘Walk on through the world,’ his father said, ‘he who remembers also forgets.’

The spirit came to a thorn tree and found a boy crying there.

‘Man,’ said the spirit, ‘please help me, I want to feel.’

‘To feel you need feelings,’ said the boy.

‘Can I have yours?’ asked the spirit.

‘Certainly,’ said the young man and after he gave away his feelings he looked happy.

Then the spirit trod on a thorn.

‘Ah,’ he cried, ‘Father help me.’

‘Walk on through the world,’ his father said, ‘he who feels also feels pain.’

The spirit came to a dead animal and found a child sitting there holding his nose.

‘Boy,’ said the spirit, ‘please help me, I want to smell things.’

‘To smell you need a nose,’ said the boy.

‘Can I have yours?’ asked the spirit.

‘Certainly,’ said the boy and took his hand away from his face.

The spirit smelt the dead animal and felt ill.

‘Oh father, help me,’ he cried.

‘Walk on through the world,’ his father said, ‘he who smells also smells bad things.’

The spirit came to a dismal place without trees or flowers. He found a man there covering his eyes.

Man,’ said the spirit, ‘please help me, I want to see.’

‘To see you need eyes,’ said the man.

‘Can I have yours?’ asked the spirit.

‘Certainly,’ said the man and smiled.

‘Oh father, help me,’ cried the spirit. ‘this is a terrible world.’

‘Walk on through it,’ his father said, ‘he who sees also sees bad things.’

The spirit came to a house where someone cried. He saw a man there blocking his ears.

Man,’ said the spirit, ‘please help me, I want to hear.’

‘To hear you need ears,’ said the man.

‘Can I have yours?’ asked the spirit.

‘Certainly,’ said the man and smiled.

‘Oh father, help me,’ cried the spirit when he heard a cry ‘what is this sad sound?’

‘Walk on through it,’ his father said, ‘he who hears also hears bad things.’

(Students compare answers. Later, check the answers with the whole class)

Post-Listening

Activity 4: Ask the students to complete the story. Write a paragraph to end it.

After the students finish writing their paragraphs, read the last part of the story.

‘Then the spirit saw the most beautiful woman and loved her instantly.

‘Beautiful woman, help me,’ he said, ‘I can think, I can remember, I can feel and I can smell, I can hear, and even see you but still I’m not alive.’

‘To live you need life,’ said the beautiful woman.

‘Can I have yours?’ asked the spirit.

‘Certainly, because I love you,’ said the woman and instantly died.
 ‘Oh father, help me,’ cried the man in terrible sorrow when he saw his love was dead.
 ‘Walk on through the world,’ his father said, ‘they that live also die.’

Homework: Give students a list of activities to choose from:

- draw pictures about the story, or
- write lyrics / a poem telling the story, or
- make a list of things the spirit takes from whom, or
- be ready to tell the summary of the story in the next lesson.

FURTHER READING

For more information on live listening, video and film, see Harmer, J. (2007). *The Practice of English Language Teaching* (4th Ed.) Essex: Pearson Longman.

For more activities, see Thaine, C. (2012). *Teacher Training Essentials*. Cambridge: Cambridge University Press and Tanner, R. and Green, C. (1998). *Tasks for Teacher Education*. Essex: Addison Wesley Longman Limited.

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Chapter 61

INTELLIGIBILITY IN PRONUNCIATION TEACHING: A STUDY OF ACCENTED SPEECH OF TURKISH SPEAKERS OF ENGLISH

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. list prevalent segmental problems in Turkish learners' L2 English speech.
2. have a repertoire of activities to help their future learners cope with certain segmental problems in their oral production of English.
3. become aware of the significance of intelligibility in L2 speech instead of insistence on the pursuit of a native-like attainment.
4. provide their learners with examples of L2 English speech similar to that of their own to increase their motivation in speech.

STUDY QUESTIONS

1. What is your attitude to accented speech? Have you ever considered the common pronunciation mistakes your learners make?
2. Do you think that native-like speech is indispensable from foreign language learning/teaching?
3. Have you ever considered intelligibility as an important aspect of oral communication?
4. What were (might be) some problems that you may encounter while teaching pronunciation?
5. What sort of phonological problems do you think are most difficult to handle?
6. What do you do about the recursive mistakes in your learners' pronunciation?
7. How do you feel when/if your own pronunciation mistakes are noticed by your interlocutors?

INTRODUCTION

This chapter examines the segmental and supra-segmental problems in a short excerpt from video recordings of accented speech and argues that it does not necessarily cause intelligibility problems and can be used as a model for ESL learners with the same L1.

The informants used in this study are, Galip Abacı and Aylin Dolu, pseudonyms for two senior students at the English Language Teaching Program at Kocaeli University, Faculty of Education. The two informants were videotaped during thirty minute interviews at the faculty of Education while answering questions about their opinions about Turkey's foreign policy.

My reason for studying accented but intelligible speech samples is that I find it interesting not only because it is a reality but also a very viable option for the majority of EFL/ESL speakers worldwide who are not likely to attain native-like L2 speech no matter how hard they try.

As Murphy (2013:5) suggests “accented speakers may serve as more realistic models of L2 pronunciation achievement and, in many cases, of societal accomplishment as well.”

Furthermore, “the speaking proficiency of an AIC (accented, intelligible, and comprehensible) speaker of English represents a sufficient and attainable level to which pronunciation teachers can feel confident in encouraging learners to aspire” (ibid.).

The idea of intelligibility has become central to the teaching of pronunciation... the idea was slow to feed through to practice, but in the 1970s many English teachers worldwide came to realize that it was unrealistic, time-consuming and potentially inhibitory to aim for a native like accent (Field, 2005:400). This led to the abandonment of traditional checklist approaches to pronunciation instruction and intelligibility was adopted as a criterion. (ibid.).

As a Turkish L1 speaker myself, I think that there is great potential in focusing on speakers like the two senior ELT majors at a Turkish university in that they are very likely to be perceived as intelligible hence successful EFL speakers by a possible target audience of this work, my first year undergraduate students at the EFL Education program of Kocaeli University in Turkey.

DESCRIPTION AND ANALYSIS

The instructional component of my project is designed for the first year students at the undergraduate program of the Foreign Language Education Department of The School of Education at Kocaeli University in Turkey. The students attend a two semester advanced Listening and pronunciation course including instruction and practice on both learning and teaching listening comprehension and the sound system of English. The majority of the students have Turkish as their native language with up to 5 foreign exchange students from mainly the Turkic republics in central Asia and other regions such as Japan, Poland, Nigeria, Kosovo and Former Yugoslav Republic of Macedonia. They aim to become English teachers at K12 level. EFL instruction in Turkey begins at grade 4 in primary level of an 8 year compulsory education system. Most of them want to be employed at government schools where the focus is on the communicative aspects of language learning according to the official syllabus designed by the ministry of education. But due to lack of quality supervision and quite a safe job security environment most teachers ignore the communicative aspects of

language teaching and adopt a grammar based approach in their instruction. Other graduates of the program get jobs with private language schools and university foundation courses, which are one year preparatory programs organized by the foreign Language schools of each university with a small minority moving onto higher academic programs for research purposes.

The four year program itself is essentially a teacher training one with strong emphasis on educational science courses instructed in L1 while every other course has English as the medium of instruction. The final year has a strong focus on the teaching practicum during which senior students do an observation based course in the fall semester and a practicum course in the spring term which is supervised by one of the faculty member and a coordinating teacher at the school where the practicum takes place.

Students enrolled in the program have to take a proficiency exam testing listening, speaking, reading, writing and grammar, which is devised and administered by the Foreign Language Education department and those who fail the test have to do the one year preparatory foundation course instructed by the same department staff.

Due to the lack of communicative focus on language teaching at primary, middle and secondary schools most students lack speaking skills and do not have a satisfactory conduct of the sound system of English. They are generally good at other aspects of language.

Students do not have much of a chance of practicing their English with native speakers, for which reason the faculty usually recruits native speaking English teachers to teach courses at preparatory and undergraduate levels. The program has one full time and one visiting American instructor at the moment. There are official restrictions limiting the number of foreign employees to a certain percentage.

THE PRONUNCIATION ISSUES TO BE ADDRESSED

For this chapter I have analyzed the interviews with Galip Abacı and Aylin Dolu. My reason for focusing on the two speakers is that their English is heavily accented and the phonological problems they display are highly representative of that of the English speech of a typical Turkish L1 speaker.

In spite of the phonological problems their speech contains, both speakers are fairly fluent and intelligible. Neither interviewer seem to be having difficulty understanding them and it would not be wrong to say that they do not create comprehensibility-related problems for their interlocutors.

I believe that the accented but intelligible quality of these speakers' English is likely to appeal to my undergraduate students, the target audience of the instructional extension of this study, in that they will find a lot of commonality between them and their own L2 speech. This aspect is worthy of consideration as it can be quite hard at times to encourage L2 learners with accentual problems to keep trying to perform speech in the target language when they when they find it hard to this without risking loss of a certain degree of self confidence. Exposure to the accented intelligible speech samples of these prominent speakers will hopefully provide them with the encouragement they need for L2 production.

Both speakers display good communicative skills. They are quite fluent and maintain smooth conversation. They are both good at thought grouping, perhaps their biggest strength that compensates for the weaknesses in articulating certain sounds.

Their speech contains occasional inaccuracy in word stress patterns but it does not prevent the general quality of their performance.

THE ANALYSIS OF THE DATA AND THE PRIORITIZATION OF THE PRONUNCIATION ISSUES

It is possible to analyze the data at hand from a segmental and supra-segmental perspective but for the sake of clarity and practicality I am going to address the segmental elements in the speakers' spoken conduct.

Figure 1.1. features the problem areas in both speakers' performance based on my analysis of the complete interviews. The words appearing on the chart are not the only problematic ones in the speech samples of my two informants and I have chosen them as they represent frequent articulation difficulties in relation to certain vowels and consonants. There are other occasional examples of outstanding pronunciation problems such as the pronunciation of the word "change" as /...../ and "urban" as /...../ by and but due to their low frequency I thought I would exclude them from this chapter.

What follows is the list of prevalent segmental problems in both speech samples and the justification of my selection.

1. Devoicing of the alveolar sibilant.
2. Devoicing of stops in word final position.
3. Tendency toward changing the quality of tense and lax vowels.
4. Articulation of the voiced, bilabial, semi-vowel.
5. Articulation of the voiced and voiceless dental fricatives.
6. Absence of the mid-central, lax vowel in certain words.
7. Articulation of the voiced, labio-dental, fricative.

1. *Devoicing of the alveolar sibilant*: Turkish normally has this sound in word final position still it is one of the most common articulation problem for most students. The problem is there is a great tendency toward devoicing the same sound in the same position in Turkish, hence the transfer into L2 use.

2. *Devoicing of stops in word final position*: This is another common problem for Turkish speakers of English as Turkish does not allow voiced stops in word final positions apart from the borrowed words, which are also devoiced when they become a part of the Turkish lexicon. e.g., "kart" for "card", "bar kot" for "bar code" and "Arap" for "Arab".

3. *Tendency toward changing the quality of tense and lax vowels*: This prevalent deficiency in Turkish L1 English speech results from the fact that Turkish does not have tense vowels and the same sound is produced with the presence of post vocalic (g) which is silent and lengthens the vowel it follows.

The reverse case, where a lax vowel gains a tense quality can only be explained with the overgeneralization of the rule that multisyllabic words in English have a prominent syllable and its prominence is usually highlighted by Turkish speakers through increasing its length rather than making it stronger or louder.

	Galip Abacı	Aylin Dolu
Devoicing of the alveolar sibilant	means- standards-others countries-ties-something friends-neighbors-wills	atrocities-shelling(s)- cities civilians-massacres-towns institutions-processes involves-colleagues-affairs Syrians-rebels-generals cities- news-areas-meetings declares
Devoicing of stops in word final position.	and-of- negotiating-doing making-solve-good-negative	Changed-world-arrived bloodshed-reforms-Arab league-road(map)-supported need-concerned-road-huge collective-stage
Tendency toward changing the quality of tense and lax vowels	meaningful-criteria- unique position-pillar(s)-region interesting-agenda-position policies	regime- Armenian-three decision-Syrian-transition regional
Articulation of the voiced, bilabial, semi-vowel	ownership –will-well powerful	Own-law
Articulation of the voiced and voiceless dental fricatives	This-that-there-then-this	truth-other
Absence of mid-central, lax vowel in certain words	capacity-agenda-adopting standards-problem-America domestic-them-referendum majority-amendments-super determined-focus-Balkans terror-energy-cooperation atomic-diplomacy-embassy professors-attacked-modern	Successful-international approaching-aggression agreed-moment-accept terrorist-collective commitment-actors-observe potential-cooperation
Articulation of the voiced, labio-dental, fricative	Very-level-have – positive values-value	collective-of-five-have-level violating-heavy-prevent observer-intervene-every

Figure 1.1. Problem areas to both speakers' performance.

4. *Articulation of the voiced, bilabial, semi-vowel*: Most Turkish speakers exaggerate the articulation of this sound thinking that they must do this as the orthographic representation of this sound as a letter does not exist in the Turkish alphabet while the sound does exist in the language represented by the letter (v).

5. *Articulation of the voiced and voiceless dental fricatives*: These sounds simply do not exist in Turkish, hence the difficulty.

6. *Absence of mid, central, lax vowel in certain words*: This sound exists in Turkish but it is represented by the Turkish character (ı) and it is not necessarily used in weak syllables only. Therefore Turkish speakers have difficulty articulating this sound in weak syllables with various orthographic representations.

7. *Articulation of the voiced, labio-dental, fricative*: The main reason for the difficulty caused by this sound is that it does not exist in Turkish and the orthographic symbol (v) has the sound of the voiced, bilabial, semi-vowel, which confuses students and hence the problem.

AN INSTRUCTIONAL PLAN FOR ENHANCING THE SPEECH INTELLIGIBILITY OF THE TARGET POPULATION

The teaching context is a two semester advanced listening and pronunciation class at the undergraduate TEFL program of a Turkish university where the majority of the students speak Turkish as their native language with a small minority of multi-language background. The learners are prospective English teachers who need to improve their written and spoken conduct of English along with pedagogic make-up. The class of 50 students meets once a week for three 50 minute slots. The course also has a listening comprehension focus and provides learners with opportunities to improve their oral communication skills. The medium of instruction is English and the instructor communicates with the students in English outside of classes, too.

Lesson I

Activity 1

Proverbs are short sayings that teach lessons. As general truths, proverbs are often expressed in the present tense. Underline the nouns and verbs ending in - s. Say the proverbs with the teacher or speaker on audio. Or take turns saying the proverbs with a partner.

Proverbs	Meaning
1. Absence makes the heart grow fonder.	a) It is better to show than to tell.
2. When life gives you lemons, make lemonade.	b) Time passes quickly when you are enjoying yourself.
3. The early bird catches the worm	c) Many projects require a community
4. No news is good news.	d) A lack of something increases your desire for it.
5. Haste makes waste.	e) make the best of what you are given in life.
6. It takes a village.	f) Success comes to those who put in effort.
7. Time flies when you are having fun.	g) Bad news travels faster than good news
8. Actions speak louder than words	h) If we do things quickly, we make mistakes.

Grant, L., 2010.

This activity is ideal in that it allows for comparing and contrasting proverbs with likely equivalents in many languages. The recording helps learners hear the correct pronunciation of the – s ending, which is consolidated with the strength of the content of the proverbs. Every time the learners think of the proverb they will remember and reproduce it with accuracy in wording and pronunciation.

Activity 2

With a partner, take turns saying the sentences. Link the – ed endings to the next word.

This activity has great potential for Turkish students, who find it hard to voice the stops in word final positions. Here their awareness is raised by the help of the linking job they have to perform. While they are connecting the two sounds they have to recognize the difference between the voiced and voiceless alternatives, which is likely to increase their accuracy. A

bonus of this activity is its potential to help them develop the skill of putting the utterances into thought groups subconsciously.

- 1 That was already pointed out.
- 2 Carlos majored in economics.
- 3 I need something called a USB drive for my computer.
- 4 You'd better get that checked out.
- 5 The teacher doesn't expect that to be handed in.
- 6 They used to be apartments. Now they're condos.
- 7 He already filled out the form and turned it in.
- 8 I went back and looked at my notes.
- 9 *Harry Potter* turned out to be a great movie.
- 10 Which countries refused to sign the treaty?

Grant, L., 2010.

Note: two sentences have – *ed* endings that get lost.

Activity 3

Scrambled mini dialogues for practice with /θ/ and /ð/

With your partner produce mini dialogues choosing one suitable response from column B to the utterances of your partner A from column B. pay close attention to the sound of the combination of letters (th).

This activity, although basically designed for developing accuracy in the articulation of the /θ/ and /ð/ sounds, has a strong communicative value. Students not only have to be aware of the existence of the sounds in question but also listen to each other carefully to respond to the prompts in a meaningful way.

Partner A	Partner B
1. Let's ask Thelma to join us on me! Thursday for your birthday.	a. This heat spell will be the death of me! I can barely breathe!
2. Thad and I are through! I've thoroughly lost my faith in our	b. I agree. It's a health hazard. Let's both go throw a fit and demand another room!
3. Is your new boyfriend wealthy?	c. Yes, I always use it when I bathe. It has such a nice lather.
4. I think Beth is too thin, don't you?	d. Have you thought about couples therapy? Maybe you can both work through your differences with a good therapist.
5. This hotel room is filthy! Everything is covered with dust.	e. Let's ask Ruth instead. I loathe Thelma!
6. They say the weather forecast is for continued temperatures in the high 30s!	f. Yes, he has a house worth about three hundred thousand dollars!
7. This bath gel is very soothing.	g. She is a lot thinner than she was before. But she looks healthy to me!

Celce-Murcia, 2011.

Lesson II

Activity 1

This next activity is an enjoyable one devised by Bowen (1972) to practice final consonant distinctions. It is based on pairs of index cards with drawings representing minimal –pair contrasts. On the front of the card is a minimal-pair sentence; on the back is a visual that cues the minimal pair.

Front	Back
1.a. He looked at her eyes	(image of eyes)
1.b. He looked at her ice.	(image of a glass full of ice)
2.a. They 're beginning to leave.	(image of people walking to the exit)
2.b. They 're beginning to leaf.	(image of two trees losing their leaves)
3.a. He's gone to get a cab.	(image of a man hailing a cab)
3.b. He's gone to get a cap.	(image of a man hailing a cab)

Adapted from Bowen, J. D., 1972, in Celce-Murcia, 2010.

This activity is best implemented with one student making the utterance and his/her partner producing the gesture of holding an imaginary glass of ice or one student producing the gesture and the other one making the utterance for the gesture performed.

Consequently this activity will likely encourage body movement, which is good for kinesthetic learners and may help overcome the challenge of focusing on the vowel length by involving them in the heat of a game-like activity.

Activity 2

A listening activity for sound discrimination:

Listen to the paragraph. Fill in the blanks with words that have the /v/ sound. Check the answer key.

VALENTINE'S DAY

All _____ the world, it is popular to _____ cards, flowers, gifts, and other tokens of _____ on February 14, St. Valentine's day. There are _____ explanations for the origin of this holiday, the most believable is that St. Valentine's Day is a _____ of February 15th Roman _____.

During this festival, bachelors picked names of women to _____ who their "valentines" would be for the coming year. The couples then exchanged gifts and sometimes even became engaged.

Adapted from Grant, L., 2010:181.

This guided activity focuses students' attention to a particular problem sound that does not exist in Turkish. It also provides them with some cultural input about the target language, which students can compare and contrast to those of their own. It is contextualized and not mechanical and this is another strength of the activity.

Activity 3

A listening activity for sound discrimination:

Which word in each pair has the /v/ sound, the first or the second? Close your book and write one or on a piece of chapter.

a. very	wary	h. vow	wow
b. very	where he	i. vie	why
c. west	vets	j. boats	votes
d. veil	whale	k. ban	van
e. wheel	veal	l. vary	berry
f. verse	verse	m. have it	habit
g. evoke	awoke		

Adapted from Grant, L., 2010:180.

Lesson III**Activity 1**

A listening activity for sound discrimination:

Listen to the teacher or the speaker on audio say each word twice. Each time you hear /ə/, put a line through the vowel.

Examples: MET- Ød	
DI – Ø - logue	
1. spe - CI - fic	7. OR - e - gon
2. de - VE - lop	8. EX - cel - lent
3. an - NOUNCE - ment	9. DE - mon - strate
4. con - CLU - sion	10. PRE - si - dent
5. pro - FES - sion - al	11. CA - len - dar
6. OR - gan	12. SPE - ci - fy

Adapted from Grant, 2010:71.

This activity is supposed to help students gain the ability to spot the use of the /ə/ sound in weak syllables of multisyllabic words. As it is a very common problem for them to articulate this sound this controlled activity would be beneficial for the Turkish learners to spot the sound as they will hardly miss it and hopefully develop awareness toward articulating it accurately in weak syllables. The clarity of this task is the strength of this activity and it will likely increase their sound recognition and production skills. As Levis and Grant (2003) argue, incorporating work on word clarity includes two major elements; students' choices and the teacher's feedback, both being quite functional in this activity.

Activity 2

A Communicative activity:

Pair Work

Use the following sentences to create a dialogue with your partner. You should listen carefully to the word the salesman chooses of the minimal pairs provided.

When you hear a devoiced /f/, respond by choosing the word that starts with a devoiced /f/. When you hear the voiced /v/, respond by choosing the voiced /v/. You can check your work by listening for context.

Example:

Salesman: Welcome. I have a **FEW** / view things I would like to show you!

Buyer: That's vine / **FINE**. I would like to get started.

Salesman: What kind of _____ would you like to buy? There are a vast/ fast number of options to choose from.

Buyer: I am not very / ferry good at making decisions.

Salesman: If you choose today, I'll take one thousand dollars of / off the price.

Buyer: How fast / vast does it go on the highway? Can we take it for a test drive?

Salesman: If you don't belief / believe me, we can take it on the highway.

Buyer: I will be relieved / relief.

Salesman: You have / half my word.

Buyer: Great! Then I choose the red fan / van.

(Or match to this pair, according to voicing.) Great! Then / thin it's a deal!

What is the customer trying to buy? Circle the correct answer. **FAN** / **VAN**

Adapted from Gilbert, 2012.

This activity is quite strong in terms of its communicative, meaningful and challenging nature. The challenge does not lie in the difficulty of the task but the requirement that the students focus on the voicing of the consonants, which is usually a big problem for Turkish students. Therefore, this activity promises focus on the voicing issue while the students enjoy the conversation between the salesman and the buyer.

CONCLUSION

The activities listed above are all designed for Turkish speakers' general segmental problems of spoken production in English. They are based on the analysis of the data gathered from two videotaped interviews with senior ELT majors in a Turkish University hoping that they will provide good models for students having similar accented speech production.

As the data mostly presented segmental elements as problematic, this chapter had its focus on the design of activities to deal with those specific problems, which does not mean that supra-segmental aspects of the English sound system do not cause Turkish speakers any problems.

It has just not been made a focus of this chapter but I strongly believe that the analysis of similar data highlighting those problems must be studied in the confinement of other studies preferably integrating both segmental and supra-segmental aspects of speech, which are inseparable from one another for the sake of intelligible and comprehensible speech.

FURTHER READING

More information about teaching pronunciation can be reached from the following resources.

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Chapter 62

VOCABULARY INSTRUCTION IN EFL CLASSES

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. define related terms like the followings: word, vocabulary, corpus, contextualized and decontextualized learning
2. discuss about vocabulary sizes that EFL learners need at various levels of proficiency
3. elaborate on three different approaches to vocabulary instruction

STUDY QUESTIONS

1. How do you think people learn the vocabulary of their native languages?
2. How do you think people learn the vocabulary of a foreign language?
3. Could there be only one most effective way of learning foreign language vocabulary?
4. Is every word in a foreign language worth learning?

INTRODUCTION

The shift from form-focused foreign language instruction paradigm to a lexically oriented one has been voiced for more than a couple of decades.

Although lexical competence was already defined as one of the most crucial indicators of general language ability decades ago (Carter and McCarthy, 1988), some other researchers, after a couple of decades, stated that L2 lexicon is in a rediscovery period (Meara, 2002). This means that the importance of lexicon in a foreign language has always been accepted but has only been gaining attention recently.

As is always the case, when a topic is considered to be worth learning, the well-known questions what to teach about the topic and how to teach it arise.

What Is Vocabulary?

When talking about *words*, most of the time, we take the topic so much for granted that when confronted with the question ‘*What really is a word?*’ there seems to be no straight comeback. From a phonetic aspect, in the natural stream of speech, there is a linguistic process called segmentation which refers to physically or auditorily identifying discrete units (Crystal, 2008: 426).

In one’s mother tongue, it is actually quite easy to draw the lines between sounds and meaningful units in an utterance, but when we stop and think about it, the concept of *word* should start to look like a delusion.

Especially while listening to people with foreign languages, the fact that we cannot put *spaces* between their words might make us think that those people are speaking too fast.

The spaces that we assume in-between words mostly come from the orthographic approach (the written forms of words) to language; that is, after frequent encounters with the written forms of words, we start imagining spaces that separate one word from another.

When a word is considered from a semantic point of view, it is not that easy to establish a straightforward connection between a single word and a particular meaning. The semantic conventions in any language could be deemed to be arbitrary.

The word *elephant* for example doesn’t look like a big animal, nor does it sound or smell like one. What you call an *elephant* in English, is actually called *tembo* in Swahili, *xiàng* in Chinese and something else in another language.

A word can also be analyzed from a grammatical standpoint. Its affixes (prefixes and/or suffixes) or its place in a sentence or an utterance might affect its meaning and function. In this respect, words are considered as *mobile*. In order to convert a statement into a question, we can simply change the position of an auxiliary verb.

Not uncommonly, some words are mobile without that much changing the meaning or function. The positions of adverbs in English are more flexible when compared to other units in a sentence. For example, the following three sentences have the same meaning although the adverb *sometimes* has different positions in each of them.

- Sometimes, when they were bored, they would go out to a park.
- When they were bored, they would sometimes go out to a park.
- When they were bored, sometimes they would go out to a park.

To go even further, pragmatics could be used as a benchmark to examine lexical items. Pragmatics is often contrasted with semantics in that while semantics deals with words and meanings, pragmatics tries to deal with meanings in context. For example, the word ‘great’ could mean wonderful in one context while in another it could be used in a quite sarcastic manner.

As can be deduced from the above discussions, defining what a word or the concept of vocabulary is takes a multiple approach.

Therefore, vocabulary can be defined as the body of words and phrases in any language which have phonologic, orthographic, semantic, syntactic and pragmatic dimensions.

The English Lexicon

The concept *lexicon*, synonymous to vocabulary, refers to all the words and idioms in any language (Richards and Schmidt, 2002). The number of lexical items in the English language has always been a topic of discussion (see Crystal, 2004 for an overview). There are claims that even the most conservative estimate of English vocabulary could not go below a million lexemes (Crystal 2004: 119). In this respect, the term lexeme actually refers to the basic form of a single word without any inflections. For example, the lexeme *eat* can be modified to fit into different syntactic environments and might appear as *eating*, *ate* and *eats*. This lexical capacity of the English language shouldn't come as a surprise as it is like an amalgam of Anglo-Saxon, Latin, French and several other languages. The point that should be considered carefully at this point is that it is virtually impossible to teach or learn even what could sound like a small proportion of the English lexicon in a limited time. This is an important issue to be resolved if, as language teaching practitioners, we want our learners to construct an expedient and functional foreign language lexicon in an appropriate amount of time.

Target Vocabulary Size in a Foreign Language

With the framework that has been discussed thus far, it should be clear that the target vocabulary size of a foreign language learner should be one of the most important issues to be discussed and agreed on before beginning a language teaching program. When we consider that about more than 80% of the words in any given text in English actually comes from the top 2000 most frequent words in English (O'Keeffe, McCarthy, and Carter, 2007), we could suppose that 2000 words would be enough to comprehend a text written in English. However, the situation is not that straightforward. Nation (1992) suggests that in order to be able to read an unsimplified text in English for pleasure, the reader needs a vocabulary size of around 5000. As digital databases regarding the English language become greater in size, it also becomes relatively easy to deal with issues related to its vocabulary. In this respect, if an instructor wants to determine how much of a reading material at hand corresponds with the most frequent words in English, all s/he has to do is to input the material into a database like Vocabprofile and determine its lexical nature. In a very short time, the instructor will reach a statistical analysis of the material, which will equip him/her with a certain level of prediction about what might happen during the actual vocabulary teaching activities.

Receptive vs. Productive Vocabulary

Receptive vocabulary refers to the amount of words that an individual can recognize and understand while listening or reading. Productive vocabulary, on the other hand, refers to the amount of words that an individual can use actively in language production, that is, while speaking or writing. One could suppose that receptive vocabulary of an individual is more

than his/her productive vocabulary. When we consider how it is crucial to have explicit knowledge about the vocabulary size of an individual or a specific language learner group, its determination becomes a very serious problem to be tackled. Compared to productive vocabulary size, receptive vocabulary size is relatively easier to determine.

With an orientation to determine English vocabulary sizes of individuals, Nation and Beglar (2007) developed a variety of vocabulary size tests. The main aim of their study was to create multiple choice tests by which language learners' vocabulary capacities could be determined in a relatively less complicated procedure but with more representative lexical items. Representativeness of such vocabulary size tests is potentially problematic in that the number of the words that can be tested is limited while the actual vocabulary size of the target language is extremely large. In the abovementioned study, through some statistical procedures, items with high levels of representativeness were chosen. Figure 1 displays a sample screenshot from one of these tests which was digitalized and freely available online at <http://my.vocabularysize.com>.

In this test, individuals who are taking the test have to make choices depending on the clues given about the target word. In Figure 1, the target word is *standard*, and it is presented in a meaningful sentence. Test-takers are required to select from five options including *I don't know*. At the end of the test, they get a score, and this score is used to make inferences about their vocabulary size by measuring their knowledge of the most basic form of a word and assuming that other forms can also be recognized. Related estimates about vocabulary size for reading and listening are also mentioned at the end of the same test as following.

It is quite clear from Table 1 that an EFL learner needs between 8,000 and 9,000 word families to read or 6,000-7,000 to listen effectively. At this point it should be borne in mind that these figures do not refer to individual lexemes in English lexicon, but rather word families, which means that this total amount actually represents individual variations of the word 'help' like helpful, helpless, unhelpful, helpfully and etc.

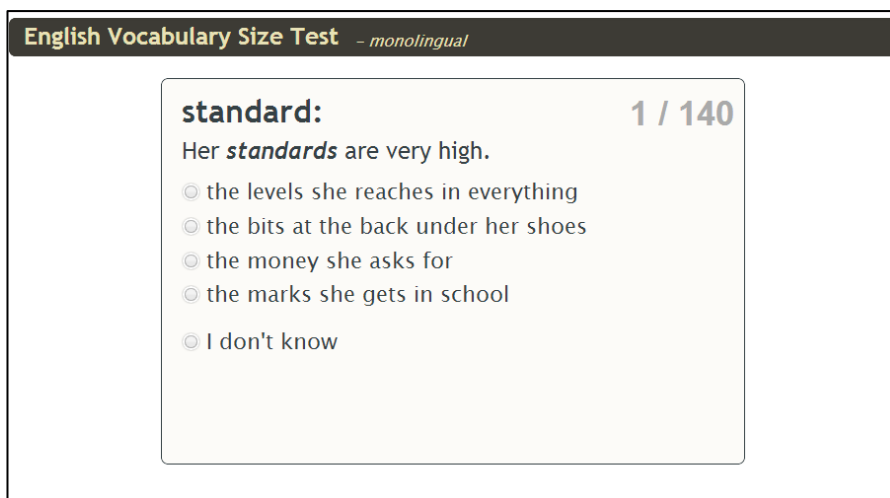


Figure 1. A screenshot from one of the vocabulary level tests developed by Nation and Beglar (2007).

Table 1. Vocabulary size needed for reading and listening

Skill	Size estimate (word families)	Notes
Reading	8,000 - 9,000	Nation (2006)
Listening	6,000 – 7,000	Nation (2006)
Native speaker	20,000	Goulden, Nation, and Read (1990) Zechmeister et al., (1995)

Retrieved from <http://my.vocabularysize.com>.

Breadth and Depth of Vocabulary Knowledge

Vocabulary learning might erroneously be regarded as a kind of piling up process. According to this point of view, which is not that rare, a foreign language learner will learn a new word at some point, and then at another occasion s/he will learn another one, and put the newly learned one into his/her mental vocabulary list like putting coins into a piggy bank. This seemingly piling-up process is often referred to as the *breadth of vocabulary*. Nation (2001) divides learners' lexicon into two aspects as breadth and depth. Breadth is actually the number of words a learner knows.

On the other hand, depth of vocabulary knowledge refers not only to word meanings, but also other parameters such as semantic relationships, collocations and syntactic patterning which is related to parts of speech of lexical items. For example, an EFL learner might be familiar with the word 'wise' /waɪz/ at a very superficial level. S/he could be aware that this word refers to experience and knowledge.

However, when the word becomes wisdom /'wɪzdəm/, its word class and pronunciation change significantly and a stress pattern also emerges because of the syllable added.

Furthermore, the word 'wise' might be used in a sarcastic manner as in 'wise guy' which refers to a person who is trying to be overly and disturbingly smart. The same expression might also be used to refer to people involved in the mafia. At this point, it should be noted that the process of building even a barely passable vocabulary will take deeper understanding of connections among the words that are being learned by the individual.

One last important theoretical point worth mentioning is the authenticity issue. Using authentic materials in language teaching has been a common sense among theoreticians and practitioners as well (see details in Gilmore, 2007). Authentic materials are produced in order to fulfil some social purpose in the language community. The producer of the material doesn't have a specific learner group in mind during the process of creation. Through the use of authentic materials, learner motivation can be improved by exposing them to real language and cultural aspects of the target language; moreover, such materials relate more closely to learners' needs in addition to providing the instructor with a more creative approach to teaching (Peacock, 1997). Sometimes it is discussed that it is actually not the material itself that should be authentic but what is done with it. However, one thing is sure that made-up language with no communicative purpose doesn't help the language learner in anyway.

What Does It Mean to Know a Word?

When we take into consideration the definition of word mentioned before, the concept of ‘knowing a word’ should have a clearer meaning. If one is claiming that s/he knows a certain lexical item, s/he has to be familiar with its phonological, semantic, syntactic and pragmatic dimensions. At this point, a knowledge of orthography (how the word is represented with letters) is not a must when we consider illiterate people who can communicate with others by using the sound system of their native language. For such people, in order to understand a word, there is no need to see it in written form.

In relation to this point, receptive knowledge of a word’s sound patterns, and productive knowledge as to its intelligible pronunciation is the first and maybe the foremost aspect of vocabulary knowledge. Then, of course, a dictionary-like semantic knowledge is needed for successful communication. However, as is the case with dictionaries, there will be many alternatives for a corresponding reference about the target word.

This will enforce a pragmatic approach to the word at hand because the context where the word is being used will help the individual to appoint an appropriate meaning to it. This kind of approach will also help the individual produce socially acceptable utterances because although knowing when to use a word is important, sometimes knowing when not to use it becomes more important. Meanwhile, the syntactic structure of the word is also a part of the process because syntactic knowledge will promote interpretations concerning the part-of-speech of the word.

PRACTICAL TIPS

Contextualized Vocabulary Learning/Teaching

The assumption underpinning contextualized vocabulary instruction is the common sense that when learners put enough effort in order to make some sense out of a new word in its own context, this effort will somehow pay off and after several other encounters with the new word, it will be learned and retained. This point of view about vocabulary acquisition/learning is maybe one of the most well-established issues after decades of discussions (see Craik and Tulving, 1975; Jacoby, Craik and Begg, 1979 for the early discussions; and Nation, 2011 for a more recent one). Theoretically speaking, there seems to be nothing wrong with this insight; however, it is a common idea among EFL learners that sometimes the instructors spend too much time trying to contextualize just one word for minutes.

Many studies suggest that EFL learners learn and retain vocabulary better when the target words are presented in a meaningful context and the learners actively try to deduce the meanings of these target words from this context (Nation, 1982; Nation and Coady, 1988). According to McCarthy (1990), a lexical item which is learned in a meaningful context is best assimilated and remembered. The effectiveness of learning vocabulary items in a foreign language can be discussed when these items are stored in the learner’s long-term memory. Oxford and Scarcella (1994) mentions that while decontextualized vocabulary learning may help language learners memorize vocabulary for tests, students are likely to rapidly forget words memorized from lists. Moreover, learning in a context provides the learner with both the linguistic features of a word, such as phonetic, syntactic and semantic rules and the

knowledge of how to use the word properly in a context (Lu-Fang Lin, 2010, p. 63). Even if most vocabulary is learned from context, which would involve the presentation of the word within a sentence, it cannot be concluded that it “is the fastest or most efficient way of learning specific vocabulary” (Sternberg 1987: 94). These ideas seem to be widely accepted by language teaching practitioners. Indeed, very few language teachers would find the idea of writing down the target words on the board and teaching them without contexts attractive.

The results of some related studies about the issue have suggested that in order to be able to guess a word from its context at least 95% coverage is needed (Laufer, 1989; Liu and Nation, 1985). This means that if we want to make guesses about an unknown word by making use of its context, we need to be familiar with the majority of the words surrounding it. Say we have a paragraph made up of 100 words. We can make effective guesses up to five or six unknown words; our efficiency in comprehension of the paragraph will go down as the amount of unknown words goes up.

Supposing that the learners are trying to deal with a reading passage where they are familiar with more than 90% of its vocabulary the following five steps suggested by Coady and Nation (1988: 104) could be taken to guess the meanings of the unfamiliar words in the text.

1. Finding the part of speech of the unknown word.
2. Looking at the immediate context of the unknown word and simplifying this context if necessary.
3. Looking at the wider context of the unknown word. This means looking at the relationship between the clause containing the unknown word and surrounding clauses and sentences.
4. Guessing the meaning of the unknown word.
5. Checking that the guess is correct.

These steps are, of course, flexible to some extent, but one point is worth mentioning. As one might guess, these steps will take some time to accomplish. Time, for language teachers in particular, is more than important.

This is why, in the determination process of the target vocabulary to teach, only the ones which will worth spending time on should be foregrounded.

Decontextualized Vocabulary Learning/Teaching

According to Oxford and Crookall (1990) we can talk about decontextualized learning when the word is removed from any communicative context that might be a clue for the learner to remember and that might make any sense about the actual use of the word as a part of the language. Similarly, Nation (2001: 100) explains decontextualization as the removal of a word from its message context to be focused on as a language item.

Among language teachers, there has been an ongoing myth about the fallacy of trying to teach new words isolated from their contexts. This must-learn-in-context motto might be one of the most common views among practitioners. However, like many conventions this one is also widely accepted and is rarely questioned. There are studies whose results claim that decontextualization of target vocabulary could be more beneficial especially at beginning

levels. (see a recent study Unaldi et al., 2013). Mnemonics, wordlists, flashcards and dictionaries etc. are some examples of decontextualized vocabulary learning/teaching techniques. In addition, words grouping, word or concept association, visual imagery, aural imagery, keyword, physical response, physical sensation, and semantic mapping could be regarded as semi-decontextualized vocabulary instruction techniques (Hague, 1987 and Carrell, 1984). When the topic of discussion is decontextualized vocabulary learning, using context-free mnemonics to teach vocabulary in a foreign language is one of the first techniques to come to minds. The reason why it is called context-free is not because mnemonics are totally free of context but because the stories or images created using mnemonics actually lack the traditional sense of context. The term mnemonic comes from Greek and means related to memory. This memory technique is useful when some rote learning is needed. The term rote learning refers to the learning process in which no connection can be created between the new input and the already available mental inventory.

For example, when we are supposed to memorize a phone number, since connecting arbitrary numbers to what we already know will be very difficult, most of the time we will fail to remember it after sometime. This type of learning is often referred to as rote learning. In terms of foreign language vocabulary instruction, the first attempt was the mnemonic key word method developed by Atkinson (1975). In this method, sound associations lie at the core of learning foreign vocabulary. The sounds of the target word is associated with any possible word in the native language. For example, the word for young girl in Spanish is *chica* which sounds like the word *cheek* in English. Once this word association is made, mental images about the words are created. By using the English word *cheek*, a mental image is created for the Spanish target word *chica*. The image could be someone kissing a *Spanish girl* on the *cheek*. The effectiveness of this technique has been a research topic for some time now (see Cohen and Aphek, 1980 and Campos and Gonzalez, 2003).

Semantic word mapping is a vocabulary teaching technique which is also common among language instructors. In order to make sense out of a target word, the teacher encourages language learners to create a network-like image for it without referring to a context (see Figure 2). In semantic mapping, contrary to word grouping, words are both put into categories and the conceptual links or paths among the words are presented (Hague, 1987 and Carrell, 1984). Semantic mapping might be suggested to improve comprehension and retention of vocabulary for language learners. Oxford and Crookall (1990) summarize Hague's (1987) six steps for using semantic mapping as follows:

1. Write the target word on the chalkboard or transparency.
2. Have the class members brainstorm words related to the topic.
3. Write/list the words by categories in the form of a map.
4. Have the students provide labels for each category (optional).
5. Discuss the words on the semantic map. Students should be encouraged to discover how the concepts are related to each other.
6. Revise the map after discussion, if necessary. Add new concepts to the map as the lesson progresses.

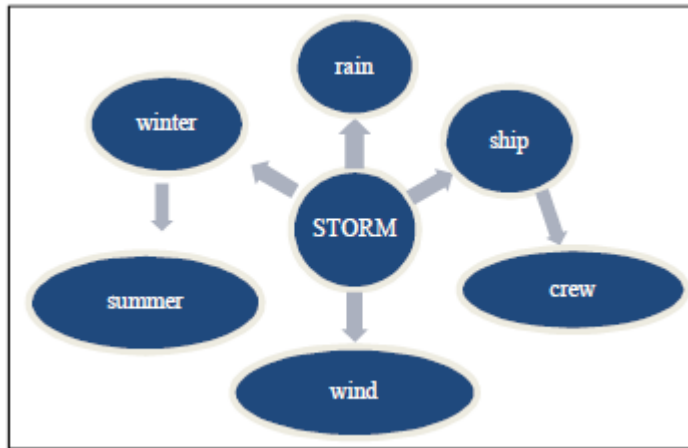


Figure 2. A sample semantic mapping for the word storm.

Using semantic mapping vocabulary activities is claimed to have greater effects on vocabulary acquisition compared to the context clue approach or the traditional dictionary-definition-plus-example approach (Margosein et al., 1982). In this study, it was stated that semantic mapping technique motivates the language learners to connect their prior knowledge to target words and this technique also allowed them to see the lexical relationships among words.

Another way of learning/teaching vocabulary through decontextualized means is the paired-associate technique. In this technique, the learners are exposed to the target words in pairs and challenged to recall the target word depending on its pair. This technique is reported to be more useful than trying to remember target words in sample sentences (Prince, 1996). Context-based vocabulary learning is thought to be suitable at later stages of language development (Coady, 1997; Nation and Newton, 1997).

It has also been stated that “especially at the beginning levels the teaching of words lists through words association techniques has proven to be successful way to learn a large number of words in a short period and retain them over time” (DeCarrico, 2001: 288).

Since there seems to be no exact answer to the question whether trying to deal with foreign language vocabulary in context is the most appropriate way one or not, the language instructor has to be flexible about the techniques being used in the language classes. Decontextualized vocabulary instruction will probably cause a one-dimensional learning. In other words, through these activities, the learners might fall into the trap of thinking that each word in the target language has only one equivalent in their own mother tongue. Therefore, their vocabulary learning experience will fall short of depth.

Using Corpora to Learn/Teach Vocabulary

This is a separate heading because teaching vocabulary by using corpus-informed activities could be placed both under the heading of contextualized and decontextualized vocabulary learning/teaching because in corpus-informed vocabulary activities there are contexts but sometimes too many of them. At this point, it should be remembered that a

corpus is a systematically collected and digitally stored database of naturally occurring spoken or written language samples. By using such databases, researchers try to turn intuitions about the nature of languages into well-supported arguments. If the related dataset is available, by going through very simple steps, one can see a list of the most/least frequent words in a language within seconds.

Apart from such basic usage, deeper insights might also be gained by means of corpus queries. The internet and other digital media sources have helped researchers to store tremendous amounts of texts on computers. British National Corpus (BNC), for example, includes about 100 million words, and Contemporary Corpus of American English (COCA) operates on nearly 500 million words. Through the use of such enormous databases, new perspectives on lexical items, especially for the English language, have been gained. Accordingly, there has been a well-established and growing emphasis on the concept of *collocation* throughout years. Collocation basically refers to the fact that words in a given context do not act in isolation but rather in pairs or groups. For example, the verb *agree* seems to have close relationships with the words *strongly* and *experts*. In other words, it is very possible to see one or even two of these words together in a context where the verb *agree* is present.

Therefore, we can say that the adverb *strongly* and the noun *experts* are collocations of this verb. To go even further, some researchers have come up with a way of defining the negative or positive atmospheres or the aura of meaning created by certain words. For example, in the English language, the word *cause* mostly collocates with negative events such as accidents, problems, deaths or damages. In the natural course of speaking or writing, a native speaker of English would not use the word *cause* with positive connotations. The vast amount of repetitions of such occurrences yielded the common idea that these are patterns rather than idiosyncrasies.

One of the most common concepts that surface when the topic is corpus linguistics is concordancing. Briefly, concordancing is a collection of the occurrences of a word-form, each in its own textual environment, and in its simplest form it is an index (Sinclair, 1991: p. 32).

Through concordancing lines, it becomes possible to see a target word in its natural environment. In terms of language pedagogy, Thurstun and Candlin (1998) suggest some simple steps when using concordancing lines in vocabulary instruction.

- Look – Screening for the key words to learn and the other words surrounding it
- Familiarize – Referring to the concordances to familiarization with the target word
- Practice – Trying to remember the target word without referring to the concordances
- Create – Trying to create a piece of writing

Through these steps, a new word might become more and more familiar to the learner. First of all, the part of speech of a word and its variations are very likely to become clear. That is, in one line the word may appear as a noun while in another the same word might function as a verb. This also provides the learner with a flexibility with lexical items, an insight which will help them to better understand the fact that a word might have several meanings and several functions in different context.

The transfer of such insights about the English language into EFL classes seems to have the potential of transforming the whole concept of foreign language pedagogy.

Recently, there are hardly any dictionaries or language teaching materials which don't somehow refer to a professional or academic corpora.

However, the practical potentials of such corpora in vocabulary learning/teaching process remain yet to be seen.

SAMPLE ACTIVITIES

Thematic Teaching Scenarios

With an aim to make more sense out of the theories about vocabulary that have been mentioned up to this point, the following reading passage, an adaptation of a story from Mawlana Jalal ad-Din Rumi, will be used in all of the sample vocabulary teaching activities.

As was mentioned previously, the vocabulary profile of this story will provide us with insights as to the vocabulary level to which it can be taught.

In order to do this, this passage should be rendered in the Vocabprofile database. After this simple process, the following screen shows up ready for further analysis.

Xenduu and the old man Once there was a man. His name was Xenduu. He was not wise, but wanted other people to think that he was wise. He used to walk around in his town and try to show off his wisdom. One day he got on a ship to travel to another country. He wanted to show his wisdom to other people too. On the ship, he saw an old man and asked him: - Tell me old man, do you know any mathematics? The old man said: - No, I know no mathematics. Xenduu went on to ask: - How about philosophy old man? Do you know anything about philosophy? - No, I know nothing about philosophy, said the old man. Xenduu answered back: - Then old man, half of your life is in vain. As time went by, when everything was fine on the ship, suddenly a storm broke out. The ship started to shake very badly. Things weren't that good. The ship was in the middle of the sea, and it was very dark and raining heavily. There was no hope for help either. Everybody was praying. Xenduu came across the old man. The old man asked this time: - Son, do you know how to swim? - No, not a bit, answered Xenduu in fear. This time, the old man answered back: - Oh, I'm so sorry, but your whole life is in vain.
--

In the outcome screen in Figure 3, it is obvious that about 96% of the reading passage actually involves lexical items from the first 2000 most frequent words in English. The interesting point here is the distribution of the first (K1) and the second (K2) 1000 words.

Among these, eight of them (3.91%) fall into 1000-2000 range, which means that this reading passage is appropriate for learners who are slightly above or below the first 1000 most frequent words in terms of recognition.

	Families	Types	Tokens	Percent
K1 Words (1-1000):	86	100	211	91.74%
Function:	...	...	(111)	(48.26%)
Content:	...	...	(100)	(43.48%)
> Anglo-Sax	...	...	(86)	(37.39%)
=Not Greco-Lat/Fr Cog:	...	...		
K2 Words (1001-2000):	8	8	9	3.91%
> Anglo-Sax:	...	...	(6)	(2.61%)
1k+2k			...	(95.65%)
AWL Words (academic):	1	1	3	1.30%
> Anglo-Sax:	...	...	()	(0.00%)
Off-List Words:	2	2	7	3.04%
	95+?	111	230	100%

Figure 3. Vocabulary profile of the story Xenduu and the old man.

The database also provides us with valuable information as to which words fall into which vocabulary range through colors. According to the results, the following eight words *vain*, *storm*, *raining*, *suddenly*, *swim*, *bit*, *sorry* and *pray* fall into the second 1000 range. Therefore, it is supposed that these must be new for the learners.

Of course, because of individual differences, some learners might already be familiar with these words, which implies that the initial vocabulary size tests are really important.

Now that the material is analyzed and the vocabulary items to focus on is made clear, the instruction process will be demonstrated through three main scenarios: contextualized, decontextualized and corpus-informed.

The Contextualized Scenario

Activity 1. Guessing the Meaning Out of Context

It makes sense to consider lexical items in a text or a natural conversation as components of a bigger dynamic system. In other words, rather than at sentential level, words actually bind at higher levels. This is why, it is important to make use of reading activities such as skimming, scanning and mapping before dealing with the target vocabulary.

As was mentioned previously, the reader has to be familiar with at least 95% of the vocabulary items in a text to be able to make deductions about a word. The first step to take while trying to guess an unknown word in a context is to determine its *part of speech*. Is the target word a verb, noun, an adjective or an adverb? For example, in the sample story the new word *break out* appears to be a phrasal verb as it comes after a subject, a storm, and used with a preposition *out*.

Since it is a verb, the subject has to be taken into account at this point. When the learners are encouraged to think about what a storm can do, the options will be quite limited, but at this point, the instructor should not spoon feed the learners quickly with the meaning and should make them struggle a bit in the process. Photos or pictures involving a storm and people panicking could be shown to the learners and they could be asked to make sense out of the following sentence: *A storm broke out, and the people are in panic.*

At the end of such contextualized meaning guessing activities, it is crucial that the meaning, senses and the potential contexts of the target word are provided by the instructor.

Activity 2. Negotiation Activities

In negotiation activities, the learners discuss about the meanings and associations of the target words in small groups. No dictionaries are allowed, only the context of the word is used to make a common sense out of it.

The discussion can be carried out in the learners' native languages at low levels, and in the target language in the higher proficiency levels. For example, in the story there is a man who thinks he is wise and he is trying to show off his wisdom to others. He is talking about mathematics and philosophy. The learners are encouraged to talk about his behaviors focusing on the word 'wise'.

In the teacher-monitored discussions, the learners are supposed to come up with an agreement about the meaning of the word 'wise'. It could be claimed that telling the students its meaning would be a quicker way of teaching. This claim might make some sense in the short term, but if the vocabulary item which is chosen to be taught is really important, the focus should be on the long term effects of teaching.

Any word with very low frequency can be made clear by the instructor without any extra activity in order to make time for words with high frequency.

Activity 3. A Box of Words

This could be counted as a continuum wrap-up activity in which the learners try to remember and internalize the target words that they have covered recently and get ready for the new words. This activity could be very useful after the target words have been introduced in a meaningful and interesting context. Most of the time, a small box with some paper will be enough. The paper is cut into small pieces, and one target word will be presented with three of them: one piece for the target word, one for the context in which it was learned and another for the translation, the synonym or the antonym of the target word. Let's say, ten new words were introduced to the class the day before, 30 small pieces of paper will be needed. The target word will be written on one piece, its context will be written on another and its translation into the learners' native language will be noted on the last one. The same procedure will be carried out for all of the ten target words. At the end, the teacher will have a box full of words with their meanings and contexts as in Figure 4.

The next thing to do will be to hand around the box in the classroom and let every student get one or two pieces according to the number of the students in the group. When the box is empty, the first random learner holds up her hand and reads what is written on her paper. The aim here is to encourage the learners to remember either the learning context from which the word is taken or its meaning or any related information about it. The teacher instructs the students to check their papers. The learners who have the context or the meaning written on their papers also hold up their hands and try to bring back the word, its context and meaning together. When this matching is done, the teacher can comment on the word or highlight important things to remember about it, then collects the three pieces from the students and puts them back into the box. Since vocabulary learning is a cumulative process, new words are added with each lesson. However, the teacher should take out the target words that have been covered and learned well to avoid a pile-up.

Target word	Translation and/or synonym or antonym	Its context
vain	without success, useless	Xenduu and the old man

Figure 4. The target word ‘vain’ along with its meaning and context.

The Decontextualized Scenario

Activity 4. Semantic Mapping

In this decontextualized vocabulary teaching activity, as was explained earlier, the target word is written on the board and the learners are encouraged to relate other words to it and thus create a network-like map for the target word.

This map could be extended as much as possible as new concepts are added. The learners might be allowed to use bilingual dictionaries. However, some caution is needed not to lose focus of the target word by involving words which are relatively distant to it. For example, although the word *problem* is related to the target word *pray*, other words related to *problem* might lead the process off the track.

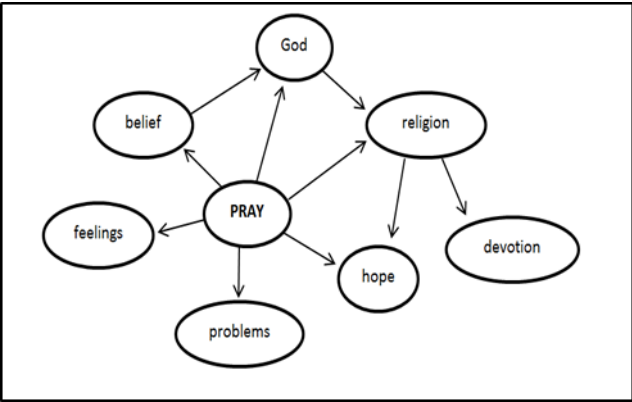


Figure 5. A sample semantic mapping for the target word PRAY.

The front side	The back side
pray	to talk to God

Figure 6. Two sides of a sample flashcard for the target word ‘PRAY’.

Suppose that one of the learners tries to relate the word *school* with the word *problem*, which is not that far-fetched actually, the instructor might end up discussing school problems with the whole class.

This network-like connection (Figure 5) scheme created as a sample for the target word ‘pray’ will raise awareness among learners as to the operating principles of words. It should be made clear to the learners that it is quite unlikely for an isolated word to convey meaning or create a meaningful context.

In the long run, this will encourage language learners to focus on the potential connections of a new word rather than trying to deal with it through isolation. An example of such isolation is flashcard studies.

Actually, it is a quite traditional way of learning new words. On one side of the card, the target word is written, and on the other side related information such as meaning in the target or the native language, synonyms, antonyms or any kind of descriptions are put down. Sets of decks are created, and as the learners become more familiar with them after frequent and systematic expositions, the words that have been learned (or memorized) are removed from the deck. A sample flashcard is given in Figure 6.

In the figure above, both the front and the backside of a single flashcard is given. This activity actually isolates the word from its context, which might look like a sort of rote learning. However, this does not mean that language instructors should avoid this activity. This kind of learning or reinforcement could prove helpful especially when used as a complementary to the main learning/teaching process.

After some meaningful learning which is full of contexts and connections, flashcards might be a practical way of not letting go what have already been covered. If they so choose, the instructors should encourage learners to use decks, carry them around and try to study the new words and carry on this activity with new decks as new words are introduced during the lessons. Mobile flashcard applications could be a substitute for the classical paper ones as the language learners of this age are closer with digital technologies than then they are with paper.

Activity 5. Mnemonics

The next sample decontextualized teaching activity is related to mnemonics. Although its effectiveness is still being discussed, some language teachers try to make use of the mnemonics while trying to teach vocabulary. In our context, one of the target words, *vain*, seems to be appropriate for such a use because this word sounds like Wayne, the last name of a renowned actor John Wayne (1907-1979). After instructing about the most frequent use of the word as pointless or meaningless, the learners could be provided with some background knowledge about the famous actor. With a couple of sentences or pictures, an image about the famous dead actor is created in their minds. It could be mentioned that he was a great actor and he influenced people all around the world. After this step, the following sentence is written on the board.

It's a *vain* to wait for a new movie from John *Wayne* because he is dead.

The sentence itself is may not be natural, but it sure creates a phonetic association which can be manipulated to make sense out of the word *vain*. Since the sentence also has emotive associations because of the word *dead*, it is expected to affect the retention of the target word in the long run. However, considering that lexical items have several aspect to be taken into account, this learning/teaching technique might not be as effective as it seems to be. To begin with, the seemingly phonetic association between the two words is only an assumption, as is usually the case, because the phonetic transcription of *Wayne* /weɪn/ begins with a rounded semi-vowel w whereas the word *vain* /veɪn/ begins with the consonant v.

Furthermore, the collocations, connotations and the semantic prosody of the word *vain* might be very different from those of the surname *Wayne*. To top it all, it is virtually impossible to create stories or images about every word in a language. The trick with his kind of vocabulary instruction is that only the words which have potentials to create stories with are chosen to demonstrate the effectiveness of the technique.

Even if a story could be created for every important lexical item, after sometime the associations between the target words and the created stories or images might be forgotten

which will make the learners end up with bunch of stories and images with no corresponding words. All in all, the mnemonics technique might be effective in developing the breadth of vocabulary knowledge in a foreign language, but it sure will not help learners to improve its depth.

The Corpus-Informed Scenario

Activity 6. Concordancing Activity

In this scenario, the learners are instructed through corpus data. After the reading activities which will help the learners to familiarize with the context and the new words in it, the learners are provided with a variety of contexts for each item through concordancers. The following is a screenshot from one of these concordancers showing the results for the target word 'wise'.

The concordancing lines provided above make it possible to see the natural contexts of the target word 'wise'. Its neighboring words or phrases like *wise decision*, *wise economic advice*, *wise response*, or *wise public policy* all have the potential to create some sense about the target word.

this... " # Some will surely dispute Chittister's declarative conclusion. The wise response for people of faith is to test its truth in their own yearning for
Wysocki # Grand Rapids, Mich. # Hillary Clinton. She is intelligent, wise , and competent. # Dennis O'Connor # Orlando, Fla. # Warren Buffet
, November 2011 about the 6-year-old right-handed shooter, and whether or not it's wise and feasible to teach him to shoot left-handed. # My daughter is cross-eye do
the geese react and fine-tune accordingly. Like any game animal, snow geese get wise to anything if they see it enough. " # Fortunately, with some seasons
the worrywart elephant, feels left out. # THEN Goodnight Moon, by Margaret Wise Brown NOW It's probably time to say good night to the room, the
the roadblocks. Here are three of the most surprising off enders: # Size wise # The headlines surrounding the childhood-obesity epidemic often skip the link between e
Marc Ganis, a Chicago-based sports business consultant, said the Vikings would be wise to stay on that road. In Houston and Cleveland in the 1990s, threats
is revenue and your content reflects that, I don't believe that's a wise strategy... That's not why people are there, " he said. "
He now fits the criteria and meets the human factors that make his pardon a wise decision,' Mr. Greenlee wrote. # In October, Mr. Bostick, 55
added, " This is a test of the good will and wisdom of the wise . ' He remains optimistic. # #
one way. " If you're going to invest in a film, the wise economic advice is don't invest in a single picture,' said Bob Rubin
distinctly nonpartisan issues: his support of a permit for a clean coal plant in Wise County, the recruiting of businesses to the state, and the passage of higher
introduced. One presents a slide show about a fortune-cookie-making machine he designed, cracking wise throughout. Another acts out a comedy sketch about a fiction
was birthed in a tiny Mediterranean fishing village of yore. Next there is that wise face full of lines and a sharp, gravely voice that sounds like a piece
My Wonderful Day: Houston premiere of Alan Ayckbourn's comedy about Winnie, a wise nine-year-old who is brought to her mother's workplace and provides her own
the warmth of a potbellied stove. A sage of the sticks, he's wise and, above all, courageous, battling wrong with such finesse that even his
to know Mrs. Berenstain's treehouse-dwelling ursine family - hapless Papa in his overalls, wise Mama in her polka-dot dress and kerchief, and their three archetypal chi
, when it comes to the mandate, " personally, I think it's wise public policy. " # aizenmannwashpost.com # #
would have to bear and pay into the program that would not make it a wise decision, " McHugh said. # Harrison argues there can be other considerations as
the ladder, that's for damn sure. " # wisemwashpost.com # For Mike Wise 's previous columns, visit ""28;9697;TOOLONG on the NBA: # Thunder strikes first in
in Finals # Vetter remembers a humble star in Durant Wizards work out Robinson # Wise : Thunder taking trip back in time # #

Figure 7. Concordancing lines for the target word 'wise'.

brief	chart	implement	monitor
channel	component	integrity	option
1. _____	2. _____	3. _____	4. _____
~ money	~ history	~ progress	~ policy
~ resources	~ mention	~ performance	~ recommendations
~ funds	~ sojourn	~ compliance	~ strategy
~ energy	~ introduction	~ standards	~ reforms

Figure 8. A sample concordancing activity to teach vocabulary.

A quick collocation query about the same word will yield its first 10 collocations in COCA as follows: man, men, decision, guy, choice, decisions, movement, wise, choices and investment.

In order to visualize what kinds of concordancing activities could be used in vocabulary teaching, the following activity can be checked as an example (Schmitt and Schmitt, 2005: 196).

In the activity which is illustrated in Figure 8, the target vocabulary items to be taught are presented at the top, then the learners are asked to guess which of the collocations given below the target words are most likely to occur with them. This activity is a good demonstration of the collocational tendencies of the words, which might help language learners to improve a more sophisticated understanding of English lexicon rather than a simplistic one. In addition to this, if carried out in pairs or groups, this activity social learning might as well be promoted by way of negotiations over collocations.

CONCLUSION

In a science fiction movie, *Phenomenon* (1996), George Malley (John Travolta) suddenly becomes superhumanly clever after some complications in his brain. Before long, he becomes a nationwide concern.

As usual, the government is involved, and his intelligence is to be tested. During this testing period, the following dialogue takes place between one of the government officials, Bob, and George Malley.

Bob: All right, I'll start the questions, and I'll be timing your responses. And we'll be recording. Any questions?

George: What's your first name?

Bob: Uh, my first name is Bob.

George: Shoot, Bob.

Bob: Answer as quickly as you can. How old is a person born in 1928?

George: Man or woman?

Bob: Why?

George: Specifics, Bob.

Bob: Okay, one more time. How old is a man born in 1928?

George: Still alive?

Bob: If a man is born in 1928, and he's still alive, how old is he?

George: What month?

Bob: If a man was born October 3, 1928, and he's still alive, how old is he?

George: What time?

Bob: 10:00. P.M.

George: Where?

Bob: Anywhere!

George: Well, let's get specific, Bob. I mean, if the guy's still alive, born in California, October 3, 1928, 10:00 p.m., he's 67 years, 9 months, 22 days, if he's born in New York, he's three hours older now, isn't he?

The relevant point to the dialogue above is that foreign language instructors generally have to deal with the following question: *How should we teach or learn vocabulary?* The reply should not be a statement but questions including specifics like the followings:

- Who are we teaching to?
- What is the purpose of learning? (to pass an exam, find more job opportunities or have fun)
- What is the learners' proficiency level?
- Is it a foreign or second language that we are trying to teach?

No one approach or technique will suffice in the process of teaching and learning vocabulary of a foreign language. The language practitioner will have to make use of a variety of techniques whose rationales might lie in contrasting approaches.

For example, translation of a lexical item from one language to another might be deemed a teaching fallacy, or making the learners use word lists or flashcards could be dubbed old-fashioned and uncommunicative. However, as language teachers, our main purpose should be to do whatever is necessary to help learners survive even if sometimes the practice seems to be incompatible with the well accepted theories.

As they say, sometimes *old tricks are the best tricks*. That's why, some conventions about learning and teaching in general should be taken into account.

First of all, trying to make use of the learners' vocabulary which is already available could be a start. Determining their vocabulary size, and then extending it with new inputs through meaningful connections between the two will be an effective way. Trying to push the learners to extremes will not work most of the time. Being aware of their proficiency levels and individual capacities, the instructor should aim at teaching new vocabulary a bit beyond their reach. In addition to this, no matter how intelligent a learner is, it will still take some time for the new vocabulary items to settle in. Therefore, the instructor should always remind the learners that learning doesn't happen overnight. Another simple but effective way is to encourage the learners to take one step at a time; rather than trying to rush learners into uncharted waters, the instructor should create an atmosphere where the learners can see both where they have been and where they are heading to at the same time.

Another convention worth mentioning is that learning vocabulary is a cyclical, ongoing and cumulative process. Exposing learners to the target vocabulary items to teach for the first time is the first step in this procedure. After a short time from the first exposition, let's say next day if possible, the learners should recycle these target vocabulary items.

Meanwhile, they should meet some other new words. By the next session, the new words that they have been trying to learn will have formed some sort of accumulation onto which other new items are to be added through meaningful connection. Of course, in the process, authentic materials should be used as much as possible while trying to deal with new words. Last but, of course, not least, vocabulary learning should also start from 'now and here', and then move on to more abstract items especially with younger learners.

A SAMPLE LESSON PLAN

In order to visualize vocabulary teaching process better, the following lesson plan for pre-intermediate EFL learners can be used. As usual, the teaching plan is static and based on common assumptions about the supposed learners. The teaching process is based on one of the teaching scenarios which was mentioned before.

Level: Pre-Intermediate

Skills objectives: Contextualized vocabulary instruction through reading

Target words: wise, show off, vain, suddenly, break out, pray, come across, swim, and whole

Materials: Reading passage - Xenduu and the old man

Stage 1 (about 10 minutes):

- Build background knowledge about the story.
- Discuss about the difference between theoretical and practical knowledge.
- Show some photos or pictures about sea voyages and share related ideas.

Stage 2 (about 5 minutes):

- Introduce the target words by writing them on the board.
- Ask the learners to pay more attention to these words during the activities.
- No pre-teaching of the target words is needed.

Stage 3 (about 20-25 minutes):

- The learners skim the reading passage.
- A class discussion about the story is carried out.
- The target words are highlighted.
- The learners are encouraged to think about the parts of speech of the target words.
- Syntactic relations of the target words are discussed. If the target word is a verb 'who does it?', if it is an adjective 'what does it modify?' etc.
- The learners, in pairs or small groups, try to guess the meanings of the target words one by one. No dictionaries allowed at this point.
- Confirm or correct the guesses of the learners, encourage them to refer to a monolingual dictionary for more information about the target words.
- Students read the passage for deeper comprehension.
- The main idea of the reading passage and comprehension questions are discussed.

Stage 4 (about 5 minutes):

- Review the target words with references to the story.

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Chapter 63

TEACHING WRITING

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to

1. evaluate and select appropriate writing activities according to learners' characteristics.
2. provide feedback on students' written work in different ways.
3. select valid transparent assessment criteria for different writing activities.
4. design effective lesson plans on writing.

STUDY QUESTIONS

1. Why should we teach writing?
2. What writing activities should students do in and outside class?
3. Should teachers correct every mistake?
4. How should teachers assess students' writing?

INTRODUCTION

One day an English teacher goes into the English class, and hears some students talking about writing in English. "Do you like writing?" asks one of them to the others silently. Most reply anxiously and simultaneously "Nooo!!" The answer is unfortunately but not surprisingly a big "No" and the teacher feels a bit desperate. "It is difficult," one says. The

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other adds “I simply can’t write.” “It takes time,” another says. One murmurs “It’s boring. I hope this new teacher knows what to do.” Hopefully, the new teacher knows how to overcome these problems in an EFL/ESL class.

What makes writing in English somewhat difficult for learners is a matter question for teachers of English for ages. Writing is productive skill and requires thinking many aspects of language such as sentence structure, grammar, spelling, vocabulary, punctuation, layout besides the content, organization, feedback and the grade they will get. Furthermore, if time is limited while writing, then the murmurs start in the EFL/ESL class. How did you feel as learners when you were assigned to hand in a written work in your English class as a young learner?

On the other hand, do teachers like teaching writing? Most teachers will probably answer this question hesitantly as they think about the workload after students have written any kind of text, then start asking “Why should we teach writing? What writing activities should we do in class? Will we correct every mistake? How will we correct and assess them? How will we give feedback to each student?” The answers of all these questions have to be clear for both English teachers and EFL/ESL students. Therefore, when the right decisions are given, the right steps are followed in teaching writing to students in an EFL/ESL class, students become more motivated and encouraged to write in English and teachers are more willing to do writing tasks.

WHY SHOULD WE TEACH WRITING?

Writing is one of the four main skills in language learning and one of the productive or active skills besides speaking. None of the skills can be excluded in language teaching and they can only be thought in an integrated way. In daily life or in careers every person has the need to write something. Therefore, the learners of English need to be able to communicate in writing. As teachers of English, we teach writing to students in an EFL/ESL class mainly for three reasons which include language development, literacy and writing skills. (Harmer, 2007)

First of all, all writing activities directly contribute the development of language use in English for students. While writing, students practice the language itself to be able to convey the meaning they want. To decide what structure and what words to use is a hard process for learners, which creates the actual need for language use. When students really have felt the need to use the language, then learning occurs.

Literacy or being literate is another requirement for EFL/ESL students and defined as the ability to read and write in a language. One aspect of literacy is handwriting which can be problematic if not eligible enough especially for learners from China, Russia, Japan where the orthography is different. The other aspect of literacy is spelling as the sounds and the letters of the words are not the same in English. Teachers should let students discover spelling rules through different activities in class. Poor handwriting and spelling can distract the reader which can lead to undesirable effects particularly if the text is formal or going to be assessed in an exam. Punctuation and capitalization are other issues in English teaching. Some languages have differences such as in giving quotations, use of commas or the capitalization of ‘I.’ Moreover, EFL/ESL students need to know functional literacy, which is more than

simply doing reading and writing in class. (Thornbury, 2010) Knowing what layout the writing requires is important for functional literacy. For example, emails, newspaper articles, essays have different layouts. Students should be aware of all these aspects of literacy to be able to function effectively in English context.

In addition to the development of language and literacy, students need to learn writing skills such as writing formal and informal e-mails or letters, constructing well organized paragraphs. Moreover, if they are learning it for academic or business English, they want to know how to write essays or reports, integrating information from different sources and citing them.

In order to improve literacy, dictation activities can help students a lot. Teachers can dictate new words, sentences or paragraphs to students and they write what is dictated. It does not take much time as long as the dictated part is short. You will see how difficult it is for lower level learners and make them realize the importance of spelling. However, you should keep in mind that full accuracy in spelling cannot be expected at all levels. Sample dictation activities are below:

Sample Activity: Dialogue Dictation

The teacher dictates a dialogue from course books or relevant to their context twice. Students work with their pairs and each pair write one person's line. So that it is easier to catch up with the dialogue. At the end, to check the correct version, the teacher can project it on the board or give the print version if needed. Next, students can read aloud the dialogue and then they may be required to write a similar dialogue. Alternatively, the teacher can dictate it with missing words calling them "elephant" like "Can you come elephant Monday elephant 3 o'clock?" and ask them to find the missing prepositions. Running dictation is another version (Harmer, 2006). The texts are on the walls in or outside the class. One pair runs to the text, read and come back to his/her pair to dictate. They should dictate in meaningful chunks. The teacher can also dictate emails requiring a different layout to improve functional literacy more.

The secretary: Hello. It's Mr. Clerk's clinic.

The patient : Hello. It's Mike. Can I make an appointment with the doctor, please?

The secretary: Of course. Can you come on Monday at 3 o'clock?

The patient : I'm sorry. I have a class at 3.

The secretary: Can you come on Tuesday at 4 o'clock?

The patient : Sure. That's OK.

The secretary: That's on Tuesday on 24 April, at 4.

The patient : OK. Thanks a lot. Bye

The secretary: Bye.

Sample Activity: Punctuating and Completing a Joke

Teacher gives a partly punctuated text and the students complete the punctuation and correct capitalization. Then, they can compare theirs with the other pairs. Next, the teacher

puts the correctly punctuated version on the board, OHT or projected computer screen. Alternatively, the teacher can stick the text on the walls so that kinesthetic learners have the opportunity to move in the class. They come, read and go back to check them. Moreover, the last sentence of the joke is not given. Students are required to come up with an ending in groups. At the end, each group reads aloud the ending and then compared with the original one. Students can come up with more creative endings. This activity can be adapted to any kind of text, any joke or a paragraph in students' course books.

The teacher is giving one of her pupils, Patty, a maths lesson. "Patty, if I give you two rabbits and two rabbits and another two rabbits, how many rabbits have you got?" the teacher asks. Patty replies seven the teacher says no listen carefully if I give you two rabbits and two rabbits and another two rabbits how many rabbits have you got seven replies Patty. lets try this another way says the teacher. If I give you two apples and two apples and another two apples how many apples have you got six says Patty good says teacher now I give you two rabbits and two rabbits and another two rabbits, how many rabbits have you got Patty replies seven the teacher is getting cross and asks how. Patty replies ... (Arnott & Haskins, 2004)

(Patty replies "Because that's six rabbits plus the one I've already got at home!")

Activity: In your groups, find more activities to improve spelling and punctuation.

WHAT WRITING ACTIVITIES SHOULD LEARNERS DO?

While deciding what writing activities students do, teachers should consider the aims, level and age of students. At first, the aims of learning writing should be set clearly in the ESL/EFL classroom so that the writing tasks can be chosen appropriately and authentically. In this process, teachers should discuss the aims with the students, check the national curriculum requirements, and if relevant future career requirements. Then, they should list the aims and determine what they need to write in the English context. For example, if they are learning English for their career or academic purposes, they might be required to write reports, well organized essays or explain graphs and tables. If they are learning English for general purposes, they will need to write emails, letters, text messages, notes, etc. If they are studying for an international exam which requires essay writing such as opinion, comparison, process or argumentative ones, they should be thought how to organize their ideas effectively in different essay types. If they are preparing for graduate studies which require summarizing many articles, they should be reading and summarizing articles in class.

Another criterion to choose activity is the appropriateness of the activity to the levels of the students. The activities should fit to the students' level of proficiency. For instance, teachers should not ask students to write essays or expect them write on abstract topics at lower levels. Common European Framework (CEF) provides a good reference for determining tasks and the expectations of teachers according to the levels of the students. To illustrate, B2 learners "Can write a review of a film, book or play." (CEF, 2001) Therefore, teachers should not expect lower level students write detailed reviews.

The students' age is another factor that determines the type of task or the content of task. For example, if they are young children, teachers cannot ask them write longer or on abstract topics. For younger learners, the task should be short and simple as their concentration duration is limited.

Moreover, before students start writing, teachers should provide them with enough exposure to real life samples and analyze them together in class. When the activities are "authentic, real-life like providing readership (having a specific reader in mind)" (Thornbury & Watkins, 2007), they directly contribute to the aims and students can link the activity to the aims better. Therefore, the aims should be clear and transparent to the students so they become more motivated.

Activity: What type of writing activities have you done in your English classes so far? Complete the table below in pairs. Then discuss how you can make the activities more effective.

Activity Type	Aim: Why do you write it?	Authenticity: Is it a real-life activity?	Readership: Does the writer have a specific reader/s in mind?	What level could it be used for?
1.				
2.				
3.				
4.				
5.				

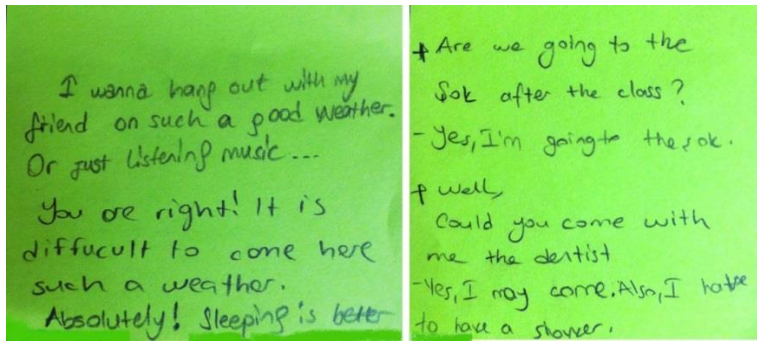
Some sample activities can be seen below:

Sample Activity: Response to a Newspaper Article

If one of the aims is "to be able to respond to an essay/an opinion," the teacher first brings enough samples of newspaper articles and responses. Then, the teacher gives a current newspaper article which is controversial, and asks students to write a reply to the article. Then, in a reading circle students can read each other's or send it to the newspaper.

Sample Activity: Writing Notes to Each Other

If one of the aims is "to be able to write notes," the teacher expresses one rule: 'NO TALKING.' The students are free and they can communicate by writing notes to each other in English. The teacher can provide the note cards or they can write on any piece of a paper. The teacher assures students that s/he will not read them but check if they are written in English or not from a distance. In this activity if the students know each other well, they write faster with more enthusiasm than they show in other activities. Some samples are below. Furthermore, more formal notes should be provided later.



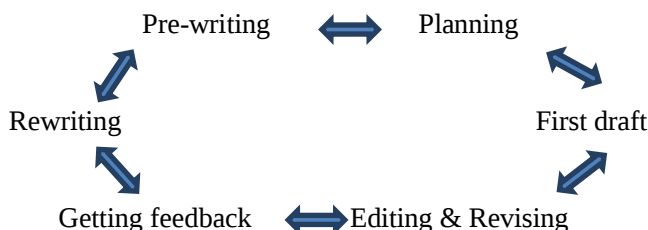
PROCESS AND PRODUCT WRITING

While teaching writing to students, teachers can focus on the product and process of writing. The aim and the task type determine the proper approach of writing.

In the product approach to writing, teachers are interested in the product only, not the process. Students write a text and teachers assess it. Teachers are not involved in the actual writing process and the feedback is given after the task, not during the process. For example, in an exam, students write essays and teachers assess only the product. Another example is students write one-sentence answers for a reading text or one-word answer for a gap-filling exercise. If there is limited time for the activity, teachers can prefer it. Moreover, students need to be trained to perform in time limits, making use of the time better as we do not always have a lot of time for writing in real life.

However, in the process approach to writing, the teacher and peers are more involved during the writing process and constant feedback is given. Constructive feedback given during the actual process of writing contributes more to the language leaning than product based writing although it takes time. In the process approach to writing, the teacher is involved in the writing process and guide students during the stages of writing: pre-writing (choosing a topic, narrowing down the topic, brainstorming, writing freely, discussion), planning (outlining), writing the first draft, getting feedback (from the teacher or peers), editing and revising, rewriting which is writing the final product. This is a circular process. The process may also include research, discussion, and data gathering. It takes time and requires effort by both the teachers and the students, but the final product is something to be proud of. One example to the process writing activity is that students write essays in class and should be provided with enough guidance. It is usually not possible to write a text properly at one-time-sitting in class. Students first choose a topic or given the topic and they are allowed to think, discuss and research. Then they write the outline and first draft of the essay. Next, students can give feedback on each other's essays that is peer feedback about content, ambiguous parts. After the students have revised it again, they write the second draft and hand it to the teacher. The teachers comments on the essays and identifies mistakes and points to be improved. So after the students get them, the teacher can provide oral feedback, too. Finally, the students write the final draft of the essay which becomes a very effective one. Moreover, students can be asked to type them, so they become 'computer literate', too, which means "comfort and fluency in using hardware and software." (Warschuer, 2002) Most can

type well but do not know how to use word processing effectively. So asking to type helps them become computer literate.



Some teachers argue that product approach is better as it is easy and time saving for the teacher, but the issue is how much it helps learners improve writing. Teachers should focus on student learning. When teachers prefer product approach for a task that actually requires process approach, students write, teachers correct and if necessary grade them. After students get the corrected versions, what happens? They usually have a quick look at them and put them in a book or even make balls or planes with them to throw and therefore forget about them, which is quite upsetting for the teachers to see the result after they have spent a lot of time correcting them. As Brown (2006) stated that to come up with a perfect final product without the above process may cause “writer’s cramp” and feel anxious as they feel the pressure “to write an in class essay that would be judged by the teacher, graded and returned with no chance for future revision.” However, when they are given another chance to improve their writing, they will come with better ones. Moreover, they will get higher marks for the improved versions of their writing tasks- final drafts- leading to more motivation to write more.

CREATIVE WRITING

Creative writing includes imaginative writing activities such as writing stories, poems, plays and cartoons. Such activities give a sense of achievement to the students and “most people feel pride in their work and want it to be read.” (Ur, 1996) Students are more engaged and try to produce more appropriate language than any other activities. They put their abilities and experiences into the work; therefore have more motivation to find the best language to express themselves (Harmer, 2007).

Moreover, in order to provide readership, the written works can be read by other peers, included in class magazine or posted on walls. If the class or the school has a website, they can be published there to reach more audience.

One problem during creative tasks can be student negative reaction stating “difficult” or “having nothing to say.” One solution may be starting bit by bit rather than expecting a long task. The more important one is providing enough courage to do the activity. Students should not feel their abilities are tested or the fear of assessment and failure.

Activity: Analyze the activities below according to the Table 1. Think of different versions of the activities. Then, find more creative activities in your groups for different ages and levels of learners.

1. Story writing: The teacher gives the first sentence of the story and each student in the class write the same sentence as the beginning of the story. Then, the students respectively add one more sentence to each other's story. So students need to read the previous sentences and add one more. After the circle is completed, students read aloud the stories. This activity can also be done as a group work activity depending on the number of students in the class. The first sentence can be as followed:

One day, the old man heard a loud noise in the garden.... OR

Suddenly the little boy fell down the tree and the man saw him.... OR

Yesterday at school an 13-year-old boy fell down the stairs. Fortunately...

2. Writing a dialogue between an animal and a human being: Students in pairs are asked to write a short dialogue between an animal and a human being. The dialogue can be between an ant, a chicken, a cow, a bull and a man. Places can be given to help them if needed such as the dialogue between a bull and a man during the carnival in Brazil or between an ant and a man in the park. Students can decide which animal to write about. A sample is below:

The ant: Hey!! You are stepping on my food.

The man: Oh, sorry! But you are everywhere.

The ant: YOU are everywhere.

The man: This is my way to home.

The ant: Next to my home! Can you give me some food?

The man: Sure. Take some bread. Your friend is climbing my shoe.

The ant: Hey body. Jump down. Quick!

The man: Thank you. I could have killed him.

3. Completing a cartoon: There are many websites available for making cartoons. The teacher has created a cartoon and asks students to write the dialogue in pairs. Students can also create their own cartoons, deciding on their scene and characters. Creativity makes them enthusiastic learners.



<http://www.toondoo.com/Home.do?param=log&msg=1>.

Activity: As a group write an acrostic poem about writing skill.

Sample poems can be seen below written by a university student aged 18.

Writing once
Requires thinking twice.
It is also hard
To make a good organization
In that context,
Neglect things making no sense
Good job, finally, it becomes.

Writing, spelling and punctuation,
Reading and of course researching...
In that university,
Things like these made us mad!
Incredible lessons, unbelievable profs
No comment and no complaint,
God see and help us graduate!

WRITING AND GENRE

In a genre approach, students analyze the text genre before they start writing in that genre. After exposure to enough samples and analyzing them, they write similar ones for the similar given tasks. To illustrate, if students are going to write formal e-mails, first the teacher provides them enough models of the e-mails so that the students really knows the format and the specific languages such as how to start or end. Then, their task relevant to their context is given and they are asked to write a formal e-mail. For example, they can e-mail to a teacher, to a chairman of a language school.

Sample Activity: Writing a Formal Email to the Teacher

If one of the aims is “to be able to write/reply to a formal e-mail,” the teacher can show some sample formal and informal e-mails, and make them analyze both types of e-mails. After the students have revised to write a formal e-mail, they can be asked to send a real e-mail to the teacher requesting information about the course or the assessment. Therefore, the teacher can really see whether they can write and send a proper e-mail. Some students may not have even an e-mail address. So they become computer and Internet literate, too via this activity.

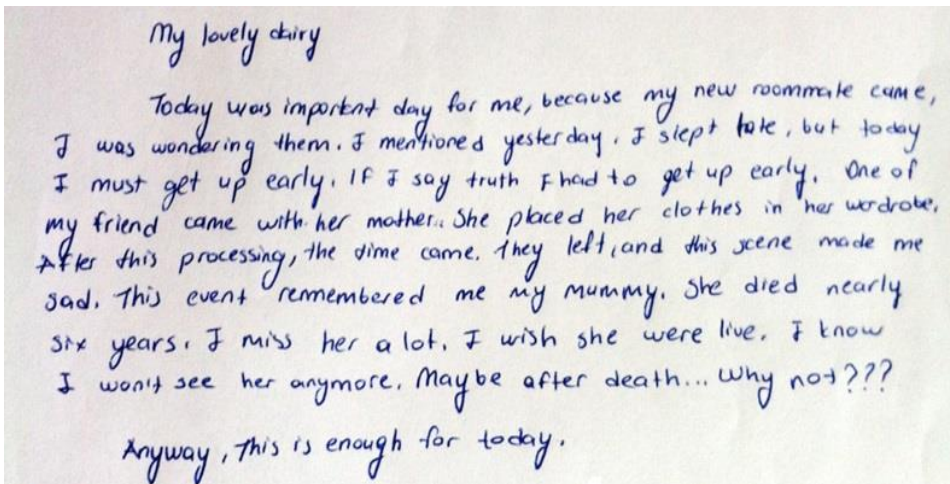
Sample Activity: Newspaper

Preparing a school or local newspaper has usually been a challenging activity for students. First of all, the students can analyze different newspapers and discuss what sections there should be in their newspapers such as articles, advertisements. The news can be local or global. Each section can be prepared in pairs or groups depending on the number of students and sections. Moreover, they can decide on a name and an editor/s can edit the sections. Later, they can be displayed in class or at school so other students can read, too.

HOW SHOULD TEACHERS GIVE FEEDBACK?

Activity: In English class, the teacher assigned learners to write journals for a week. Read the following journal written by a university student aged 18 living in a dormitory and answer the questions below with your friends.

1. What is the aim of the activity?
2. How would you give feedback on it?
3. What comment would you write on it?
4. Would you correct the mistakes? If yes, which ones and how?



Teachers leave the English class with a lot of writing assignments, thinking “How will I give feedback about them?” How you give feedback depends on the aim of the activity. For example, the aim for the activity above is to write about daily experiences on a journal so to be able to communicate or convey the message is important. Therefore, the teacher should not correct the language mistakes in this journal. The feelings are clear. The teacher can only respond it by adding a comment regarding her feelings. Moreover, if the aim is only to write about past experiences in A2 level, only past tense usage can be corrected. One problem with journal writing can be the writer’s block, which means “nothing to say.” In order to prevent it, learners may be given a specific topic such as writing about a memory when they felt embarrassed for B1 learners or describing an important person in their life for A2 learners.

Constructive feedback should absolutely be given rather than just correcting and saying “Rewrite please.” Teachers should write not only negative but also positive comments on students’ written work. Otherwise, one can easily imagine what students feel when they see a paper full of red markings and negative comment. They would never want to write again. Students wonder the comments the teacher have made on the paper rather than the corrections and compare the comments on each other’s papers. Another way to give feedback is mini student conferences. Teachers can get together in class if they have time or out of class and talk about the feedback. So students have a chance to ask questions to teachers. Furthermore, teachers can also talk about common mistakes and comments in class together. Common

mistakes can be shown on the board or one student writing can be corrected and commented together without revealing the student's name.

While correcting students' writing, the teachers can ask themselves "Should I correct every mistake?" The answer depends on the aim of the task and the level of the students. For example, if the aim of the activity is to be able to write about one's daily activities in the past, the teachers should correct mistakes about the use of past tense, verb forms. A correction about the use of articles which is not the focus of the activity or use of relative clauses which has not been taught in class but students only have dared to use can be demotivating. So as Harmer (2007) states teachers should be selective when correcting, which he defines as 'selective marking.' Teachers should avoid 'overcorrection' which leads to the discouragement of the students, especially students at lower levels. Ur (1996) states if teachers correct mainly the language, they convey "the implicit message that these are what matters." However, some students can ask for detailed correction, then their writing can be corrected a bit more. Teachers can decide it only by observing the students well. To sum up, as Ur (1996) states teachers have the "potential conflict between language instruction versus encouragement of learning," but correction should not hinder learning.

Another question is "How should I correct mistakes?" Teachers can identify and write the corrected version of mistakes, can just underline mistakes or use correction symbols to show mistakes.

When teachers usually hand back the written works with the corrections, low level learners can make use of it much. But what do the students usually do? Do they read it again carefully and learn the correct forms? Unfortunately, the answer is usually no. They have a quick look at it, see the number of corrections and put it away, sometimes between pages of a book to be lost or use later as drawing paper. Alternatively, when teachers just identify the mistakes by just underlining or marking with correction symbols and ask students to correct the mistakes themselves or with their peers, students care about them more. This is also a process of awareness raising of the mistakes for the students. They may not be aware that they have made a mistake. Students put great effort while trying to correct them. They look up dictionaries, search grammar books or ask for help from their peers. Moreover, if the teachers grade them after student corrections, that is final drafts, then their effort worth seeing.

Teachers can correct the mistakes in different ways as seen below. In the first one, teachers correct the mistakes themselves and can be used with students at very low levels of English. In the second one, teachers show the mistakes by using correction symbols and ask students to correct them. In the third one, teachers just underline the mistakes without identifying the kind of mistake and students correct. It can be used with upper levels learners of English.

saw a beautiful girl Later, a
Yesterday he seed beautiful a girl in the café. After he went to talk to her. She was
student.

Yesterday he seed beautiful a girl in the café. After he went to talk to her. She was ^
student.

Wf

wo

ww

(art)

Yesterday he seed beautiful a girl in the café. After he went to talk to her. She was student.

Use of correction symbols provides an opportunity to reconstruct the language. A short list can be seen below. Teachers can come up with more symbols as long as it is studied in class with the students. The teacher can bring a poor text and students can correct it using the symbols.

Correction Symbol	Meaning	Student sentence	Corrected version
sp	Spelling	I love wrting.	I love writing.
cap	Capitalization	On monday we went home late.	On Monday we went home late.
Wf	Wrong form	He answered it careful.	He answered it carefully.
wo	Word order	He bought cheap a book.	He bought a cheap book.
ww	Wrong word	The bell stole.	The bell rang.
^	Missing word	I going home now.	I am going home now.
frag	Fragment	When I came here.	When I came here, I saw him.
?	Not understood	When sports I?	Student correction
p	Punctuation	He said Hello.	He said, "Hello."

Peer feedback is also invaluable for the teachers for feedback giving. Learners learn from each other a lot and opportunities should be provided. Teacher shouldn't be the only reader and guide. Even one single sentence can be checked by their peers. After they have written a piece of work, they read each other's and give feedback on them such as effective points, parts that is not understood or need clarification. Students should be well informed of peer feedback. Guidelines which are prepared by the teacher according to the activity can be provided in class as photocopies or written on board. The expectations of the teacher should be clear for the students. An example of peer feedback can be done by the teacher as a demonstration by projecting a sample on the board. After they have analyzed a work together, they will be clearer about the expectations. While giving feedback, students can focus on content or both content and form, depending on the activity. However, it is usually more effective for students to focus on content because if it is not appropriate with their levels, students can correct a language mistake in a wrong way or try to correct the already correct one resulting in an another mistake. Therefore, the other students complain to the teacher about wrong corrections of grammatical forms. The social atmosphere of the class may also affect the appropriateness of peer checking. Some students can be content to find others mistakes which lead to humiliation.

Sample Activity: Peer Editing on an Academic Paragraph on Topics of Interest

In an academic writing class, after the teacher have presented how to write an academic paragraph, how to give feedback, the use of correction symbols, students are given a sample student paragraph and asked to edit it. Peer editing checklist is also provided. It can be done as an individual or a pair activity. Afterwards, students can be asked to rewrite it. They may

also write their own paragraphs, peer edit them in class, rewrite and submit them to the teacher. The teacher can provide different checklists for different activities or write some guiding questions on the board.

There are three reasons why I love learning English. The first one is that you are free to choose the place you want to study. You don't have to sit at a table and carry heavy books with you. You can revise your vocabulary cards in a bus or listen to music repeating the lyrics lying on bed. The second reason is that it requires real communication if we want to improve our English. Finally, I love reading a lot and my leisure time activity improves my English. I read a lot of short stories. My brother really loves reading, too. To sum up, I love learning English.

Peer Feedback Checklist

1. Is the format appropriate? Write a comment about it.
It looks good, yet you should remember to write a title and indent the first line.
2. Underline the words or sentences you would like to comment on. "real communication" Can you explain it more, please. I couldn't understand what you mean exactly.
3. Does it have a proper topic sentence?
Yes. Your topic sentence. It is clear
4. How many supporting details are there? Have they been explained enough?
There are 3. All start with a transition. You can explain the second reason better. Can you give examples of situations where real communication takes place?
5. Is the paragraph coherent?
Your paragraph is about you, but you have written a sentence about your brother. It seems irrelevant. In addition, you used two subjects 'I and You.' You can prefer one.
6. Is there a good conclusion sentence?
You have remembered to write a conclusion sentence but I think you can make it stronger. It is very similar to your topic sentence.
7. Check the paragraph for punctuation, capitalization and spelling.
I could not see any mistake about them. You are very good.
8. What do you like about this paragraph?
This is a good paragraph. I could understand the content well and it is not confusing for the reader.

HOMEWORK OR IN-CLASS WRITING?

Teachers of English have a lot of time limit in class and following a curriculum, and have difficulty in deciding whether writing should take place in class or outside.

When there is time limit and a curriculum to catch up with, it is difficult so writing can be given as homework or as Thornbury (2012) defines "out-of-class work or 'between-class' work." He (2012) also adds

"What happens between lessons is as important – or more important – than what happens in them. Think of the classroom as a kind of 'pit stop' where learners come in to be re-fuelled and change their tyres. The real action is happening outside."

However, when teachers let them write at home, other problems occur. They get help from different sources. How much help from whom is acceptable? Students can get help from other peers, internet and people with higher levels of English and may not call it plagiarism. Students should be informed of plagiarism beforehand. Citation rules should be taught briefly at least. Internet can facilitate plagiarism as it provides millions of texts for copying and pasting but also offers teachers chances to check for plagiarism via search engines or special plagiarism checking software (Warschauer, 2007). On the other hand, all writing shouldn't be left home. During the process of writing, teachers themselves should also be ready for students who seek help. Writing in groups, peer feedback on writing texts are examples of valuable activities. (Wharton & Race, 1999)

WHAT ARE THE ASSESSMENT CRITERIA?

Assessment criteria should be decided before students write their texts and should be discussed and studied together in class so that students are aware of teachers' expectations from their writing. According to the criteria they can assess their own writing before submission, so the final work and the grade will not be a surprise. The teacher can focus on the content or the form, however there should be a 'fair balance between content and the form' in the criteria. (Ur, 1996) The criteria depend on the aim of the task and the level of students.

The aim of the task can be to practice a grammatical structure use or write an opinion essay, etc. If the writing task is one sentence answer to a comprehension question in a reading exam, the focus should be on meaning that doesn't require any loss of points for grammatical or spelling mistakes as long as it conveys the intended message. If the aim of the task is to test the use of a grammatical structure, the type of mistake determines the loss of points. For example, if the student wrote "I went to the library yesterday," the student should not lose any point for misspelling 'library.' Unfortunately when students get no points for a similar spelling mistake, it leads to the demotivation of the students for getting low marks very often. Similarly, if students are required to write dairies to improve writing for a long period of time, as long as the message is conveyed, no correction should be made and should not cause loss points.

The level of students is the most important factor to determine teachers' expectations. When the teachers' expectations exceed the level of the students, it is inevitable for the students to get lower marks. According to the level of the students, the top bands should be decided reasonably and Common European Framework (CEF) provides descriptors for writing competences at each of its six levels and provides criteria for assessing the learners' abilities. The CEF distinguishes between written production and written interaction. The descriptors for overall written production at all levels are given below in the form of "can do" statements. Written production also includes descriptors about creative writing; reports and essays. Written interaction includes correspondence, and notes, messages and forms.

	Overall Written Production
C2	Can write clear, smoothly flowing, complex texts in an appropriate and effective style and a logical structure which helps the reader to find significant points.
C1	Can write clear, well-structured texts of complex subjects, underlining the relevant salient issues, expanding and supporting points of view at some length with subsidiary points, reasons and relevant examples, and rounding off with an appropriate conclusion.
B2	Can write clear, detailed texts on a variety of subjects related to his/her field of interest, synthesizing and evaluating information and arguments from a number of sources.
B1	Can write straightforward connected texts on a range of familiar subjects within his field of interest, by linking a series of shorter discrete elements into a linear sequence.
A2	Can write a series of simple phrases and sentences linked with simple connectors like 'and', 'but' and 'because'.
A1	Can write simple isolated phrases and sentences.

(CEF, 2001 p.61)

To give more examples, according to CEF (2001, p.62) independent user threshold that is B1 students “Can write short, simple essays on topics of interest,” and B2 students “Can write an essay or report which develops an argument systematically with appropriate highlighting of significant points and relevant supporting detail.” Therefore, one cannot expect B1 level students to write a detailed argumentative essay. Moreover, when CEF is checked for grammatical accuracy reference tables, top band for B1 level students is “Communicates with reasonable accuracy in familiar contexts; generally good control though with noticeable mother tongue influence. Errors occur, but it is clear what he/she is trying to express.” (CEF, 2001 p.114) So students at B1 level should not lose points for every grammar mistake. Another example is that A2 level learner “Uses some simple structures correctly, but still systematically makes basic mistakes – for example tends to mix up tenses and forget to mark agreement; nevertheless, it is usually clear what he/she is trying to say,” (CEF, 2001 p.114) which means teacher cannot expect total accuracy in writing texts.

Teachers can use holistic or analytic rubrics while assessing and grading a piece of writing. Holistic rubrics give a broad band of grading and overall impression of the written work. It is usually easier for experienced teachers to use as there is a single score. However, if there are a lot of texts from different classes to be assessed by multiple assessors, to sustain a reasonable objectivity, analytic rubrics are preferred. Separate scores are given for different aspects of the written work such as content or task achievement, language (range and accuracy of language structures and vocabulary), coherence and mechanics which include format, spelling, punctuation and capitalization. Points for each band can be decided by teachers unanimously. Rubrics should be shared and discussed with students beforehand.

Another option for teachers to assess writing texts is ‘automated writing evaluation software’ and their use has increased since the digital age begun. They provide holistic or analytical scoring. They are used in standardized tests and classroom instruction (Warschauer, 2007)

Students can keep their writings in a file called “portfolio” where they keep all kinds of tasks they have done in the English class including first and final drafts. Therefore, at the end of the term they see how much they have studied and progressed. It is a proof of the work

they have done. Teachers should set the aims of portfolio, plan and supervise it, and assess it in relation to valid and transparent criteria. Moreover, students can use it as “European Language Portfolio” when they need to prove their language level internationally.

MORE SAMPLE ACTIVITIES

Sample Activity: Preparing, Conducting and Reporting a Survey

The students can prepare their own questions in a survey on a given topic or a topic they can decide. Topics can be how much students are content with their school, what activities they have every day or opinions asking about their school life. The topic can be chosen according to the level and age of the students. Alternatively three question be given as guidance to students and they add three more questions. After they have decided the questions in the survey, they conduct it either in the class or at school. They should ask at least 15 to 20 people. Later, with the teachers’ guidance they should analyze the answers and write a short report about them. Moreover, they can make graphs related to the results so that they become computer literate.

How often	always	often	sometimes	rarely	never
do you go to the school library?					
do you eat in the cafeteria?					
do you go the cinema?					

Do you agree that students at university	I strongly agree	I agree	I disagree	I strongly disagree
should pay tuition?				
should attend all classes?				
work?				

Sample Activity: Extensive Reading Project

After the teacher have explained the importance of extensive reading to improve English, the teacher asks student to choose any book that they would like to enjoy reading. It is important that students choose their own books for pleasure in the given time, probably two weeks. Then the teacher may provide a time table for reading them. The students are asked to bring it to the class and read in the class time to time, complete the given writing tasks and display them on poster in the class. The content can be changed according to the level and age of the students.

- Week 1&2: Find the books. Give a short presentation about the book (the name of the book, the writer, why s/he has chosen that book, etc.)
- Week 3&4: Read and write a short description about the characters.
- Week 5&6: Read. Write a dialogue which is not directly in the book between two characters.
- Week 7&8: Read. Write a letter to one of the characters in the book.
- Week 9&10: Read. Write your own end of the book.
- Week 11&12: Finish reading. Write a summary. / Write a letter to the author.

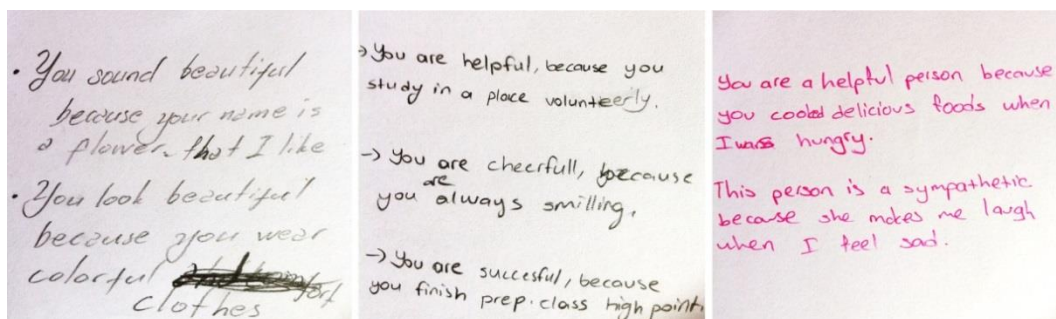
Sample Activity: Sentence Completion

The teacher gives half sentences and the students complete them. After they have completed, they may compare their answers and the best answers can be read aloud in class.

- If I had ten brothers, ...
- If I had four arms, ...
- If I had 30 hours in a day, ...
- I wish I could ...
- I wish I was ...

Sample Activity: Complementing Each Other

After the students have learnt or revised personality adjectives, they are asked to write two or three complements to someone they choose in the class without stating the name of that person. They can be asked to write reasons, too. This activity also contributes to building positive atmosphere in the class. After they have written, the cards are read aloud and students try to find out for who they have been written. Samples can be seen below.



Sample Lesson Plan

Students' age: 17

Students' level of English: A2

Aims of the lesson: At the end of the lesson, students will be able to write an informal e-mail, to describe cities briefly, to plan activities.

Target language: E-mail opening and closing, the modal 'can,' 'There is/are'

ESA Stage	Approx Time	Aim	Teacher Activity	Student Activity	Interaction	Materials
Engage	1-2 min	To arouse interest	T shows students(ss) some photos of a country and asks which country it is. Then asks ss match the photos to the cities written on the board. (Hollywood, Washington, Florida)	Guess match	Lockstep	Photos Board (B)
Engage	4	To awaken background knowledge	T asks what they remember about them and can do there. T writes on B: "In Hollywood you can see film studios." Target language: Revision of 'can, there is/are'	Write sentences	Pairs	
Study	3	To elicit the content	T explains that a student from the USA has sent an email to a friend and they are making plans for the summer holiday. T writes questions on the B. Then, T elicits answers. 1. Which cities does John want to go? 2. Why does John want to visit those cities? 3. How long is he planning to stay in each city? 4. "I8r, C u"?	Read the e-mail and answer the questions. Then, check answers with their pairs.	Individual Pairs	Copy of the e-mail
Study	3	To elicit the content	T tells the other friend has sent a reply. T asks 1. Does Tom want to go to these cities? 2. When does Tom want to go? 3. How long does he want to stay in each city?	Read the e-mail and answer the questions.	pairs	Copy of the e-mail
Study	3-5	To analyze informal e-mail	T asks some concept check questions about informal e-mail format. 1. How does he start the e-mail? 2. What is each paragraph about? 3. What transitions are used in the plan? 4. What grammar structure is used to talk about plans? 5. How does he end the e-mail?	Answer voluntarily.	Pair	

ESA Stage	Approx Time	Aim	Teacher Activity	Student Activity	Interaction	Materials
Activate	10-15	To write an informal e-mail.	T tells students “You are planning to go on holiday in August with one of your friends in Turkey. You want to visit different cities. Write an e-mail about which cities you would like to visit and explain the reasons.” While ss are writing, T is available for help around the class.	Write individually.	Individual	Some paper
Study	7-10	To give peer feedback on informal e-mails To raise awareness of the informal mail.	T asks ss to read each other’s mail and give peer-feedback on them. T writes guiding questions on the board. A demonstration can be done by the T. next, T monitors ss. -Did s/he start with an opening and a closing remark? -Can you find the reasons to visit each city easily? -Underline the words/sentences that you do not understand.	Read each other’s e-mails and writes feedback on them.	Pairs	
Activate	3-5	To revise and edit the e-mail.	T instructs ss to revise and edit their own e-mails.	Revise & edit e-mails. Rewrite if required.	Ind.	
Activate	10	To reply to an informal e-mail.	T instructs ss to write a reply to the other friend’s e-mail.	Write a reply to the e-mail.	Ind.	
Study	5	To give peer feedback on informal e-mails.	T asks ss to read each other’s reply and give peer-feedback on them. (Peer feedback and reply should be written by different ss.)	Read each other’s replies and writes feedback on them.	Ind Pair	
Study	3-5	To revise and edit a reply to an e-mail.	T instructs ss to revise and edit their own e-mails.	Revise & edit e-mails. Rewrite if required.	Ind.	
Study	3	To reflect on achievements	T collects all e-mails for further feedback. Then, T asks ss to report back about what they have learnt today, what they can do.(I can write a good informal e-mail.) T can ask some ss about their holiday plan mentioned in the e-mails.	Ss answer and talk about their plans.	Lockstep	

E-mails for the Sample Lesson Plan

From: John
To: Tom
Subject: Holiday

Hello Tom,

How are you? I hope you are fine. I am writing to you about our holiday in July.

I have done some research and chosen three cities to visit in the USA. I think we should visit Hollywood, Washington and Florida. First, we can go to Hollywood. There are a lot of film studios there. I hope we can visit Universal Studios there. We can stay for two days. Then, we can go to Washington for two days. We should see the White House. Finally, we can go to Florida. There are a lot of nice beaches there. We can swim there. We can stay for three days in a cheap hotel.

I hope you want to visit these cities, too. I am looking forward to your opinion about the holiday plan

See you.
John

From: Tom
To: John
Subject: Re; Holiday

Hi John,

I am happy to hear about your holiday plan. I want to visit these cities, too. But I think we should spend three days in Hollywood and two days in Florida. In Hollywood there are a lot of activities to do. Two days will not be enough.

We can go on holiday on 3rd of June after the school has closed. Is it OK for you? If so, we can buy the plane tickets.

I am looking forward to your answer.

Call you l8r. C u.
Tom

CONCLUSION

Writing is an indispensable part of language teaching. Enough time and effort should be allocated to improve learners writing skills, therefore, overall language skills. The writing activities should be meaningful, authentic, having readership and appropriate for students' levels. Process and product writing approaches should be applied according to the aim of the lesson. During the process of writing teacher and peer feedback is invaluable for learners and peer feedback should be encouraged. For teachers, giving feedback may seem difficult but we should always remember the benefit for the learners. We should avoid overcorrection and

focus on selective marking. Moreover, creative writing activities bring humor to class and lead the sense of achievement and pride for the learner. About assessment, we do not have to assess every single piece of writing, however when there is need to assess, we should have valid transparent criteria that is discussed with the students.

For students undergoing teacher education The European Portfolio for Student Teachers of Languages (EPOSTL) is a helpful document. It aims to encourage student teachers to reflect on the didactic knowledge and skills necessary to teach languages, help them to assess their competences, monitor their progress and to record their experiences of teaching during the course. (Newby, Allan, Fenner, Jones, Komorowska & Soghikyan, 2007)

Below you can see the self-assessment, which contains lists of ‘can-do’ descriptors about writing and written interaction. Read them and write your reflections in the space provided.

Writing/Written Interaction	Your reflection
1. I can evaluate and select meaningful activities to encourage learners to develop their creative potential.	
2. I can evaluate and select a range of meaningful writing activities to help learners become aware of and use appropriate language for different text types (letters, stories, reports etc).	
3. I can evaluate and select texts in a variety of text types to function as good examples for the learners’ writing.	
4. I can evaluate and select a variety of materials to stimulate writing (authentic materials, visual aids etc.).	
5. I can evaluate and select activities which help learners to participate in written exchanges (emails, job applications etc.) and to initiate or respond to texts appropriately.	
6. I can help learners to gather and share information for their writing tasks.	
7. I can help learners to plan and structure written texts (e.g., by using mind maps, outlines etc.).	
8. I can help learners to monitor, reflect on, edit and improve their own writing.	
9. I can use peer-assessment and feedback to assist the writing process.	
10. I can use a variety of techniques to help learners to develop awareness of the structure, coherence and cohesion of a text and produce texts accordingly.	
11. I can evaluate and select a variety of techniques to make learners aware of and use spelling patterns and irregular spelling.	
12. I can evaluate and select writing activities to consolidate learning (grammar, vocabulary, spelling etc.).	

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Chapter 64

TEACHING READING IN EFL CLASSES

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. list the basic skills in reading.
2. list the difficulties in reading in EFL context.
3. list reading sub-skills.
4. define intensive and extensive reading.
5. differentiate between facts and opinions.
6. recognise an argument in a written text and name its parts.
7. evaluate an argument and analyse a text critically.

STUDY QUESTIONS

1. What are the four strands of reading?
2. What part of the passage do you pay most attention to while reading?
3. What do you think are the differences between reading in native language and reading in foreign language?
4. What do you think an argument means in reading?

INTRODUCTION

Language is an important means of communication. People learn how to convey and share the meanings of things through language (Halliday, 1993). The relationship between second/foreign language acquisition and communication can be best explained by Halliday's language-based theory of learning principal. According to Halliday all learning is a linguistic process and consists of three interwoven language functions: learning language, learning content through language, and learning about language.

As a complicated system language includes "small elements that can be combined in an infinite number of ways in order to make larger structures" (Lems, Miller & Soro, 2010, p.3). The four dynamics of language are phonology, morphology, syntax, and semantics. The phonology is the sound system of a language and a set of rules that control how they can be combined. In other words, it is the audible quality of language. Morphology is the forms of words, and the ways these forms of words are related to other words. Syntax is the rules for the formation of sentences and phrases in which words can be combined. Finally, the semantics is the study of meaning in language. It includes the meanings that emerge from all of the previous three elements: the sounds, word meanings, and word-order patterns. Phonology, morphology, syntax, and semantics exist in all languages. However, a writing system, or orthography may not exist in every language. The other four universals of language (phonology, morphology, syntax and semantics) are naturally acquired by native speakers of a language. On the other hand, orthography is not naturally acquired and needs to be taught since it is related to literacy (Peregoy & Boyle, 2005, p. 164). Pinker (2007) supports this claim by stating that, "Language is an instinct, but reading is not" (p. 14).

In language learning there are four skills that learners need for complete communication: listening, speaking, reading, and writing (Canale & Swain, 1980). In the first or native language, people have all these skills and background knowledge that is needed to communicate. So, they are probably not aware of the complexity of the process. However, in second/foreign language acquisition the four skills represent a particular pattern. Though they are stated in the same order with first language, generally listening and reading are characterized as "receptive," and speaking and writing as "productive". However, we should be cautious in drawing precise lines between them "because they fail to capture the active meaning making that takes place during both listening and reading" (Lems et.al, 2010, p.5). The four skills need to be included in the Foreign Language (FL)/ Second Language (SL) curricula both for instructional planning and assessment. Thus, this chapter particularly focuses on reading skill in foreign language learning.

HOW READING IN NATIVE LANGUAGE DIFFERS FROM READING IN FL

Reading is an interactive and complex process (Birch, 2007; Rumelhart, 1980). The major goal of reading is to make sense of the text rather than just to decode the words in the text (Adams, 1990; Blachowicz & Ogle, 2001; Goodman, 1970 and Wagoner, 1983). Koda (2007) supports this by stating that the aim of reading is "to construct text meaning based on

visually encoded information” (p.1) which takes place between the text and the reader’s processing strategies and background knowledge.

First or native and FL reading have different processes for the readers for Carrell and Grabe (2002), since:

- FL readers is limited in their linguistic knowledge;
- they do not have adequate cultural and social knowledge that takes place in the target language context;
- they do not have background knowledge, which makes sense of the reading material.
- they learn a FL for various purposes such as visiting, staying or working in the countries where the target language is spoken.
- they have to use both their native language and FL. (Carrell & Grabe, 2002).

Therefore, it is more challenging to read in FL than reading in first or native language (Koda, 2007), which requires a special instruction of strategies.

READING COMPREHENSION

Reading comprehension refers to forming the meaning of the oral or written messages. Readers construct these messages by using “bottom-up” and “top-down” approaches (Stanovich, 1980). Bottom-up approach is a mastery of a set of word-level skills such as letters, sounds, syllables, words, phrases, sentences, and paragraphs. Meaning construction process begins with smaller parts of the texts, which results not getting the whole meaning yet it allows the reader to be able to decode connected text.

Different than bottom-up approach, top-down approach refers to the analytical and cognitive skills that are needed for comprehension. Readers focus on the whole text passage (global meaning) by making connection with prior knowledge, rather than just relying on words to comprehend the text.

Lems, Miller & Soro (2010, p.230) summarizes the two approaches by stating that “bottom-up skills refer to the word-level skills that are required for decoding and top-down skills refer to the analytical and cognitive skills that are needed for comprehension”. They add that both skills interact and overlap for “making many rapid judgments about words and keeping the words in working memory as we form reasonable interpretations about possible meanings” (Lems et.al, 2010, p.33).

DIFFICULTIES ENCOUNTERED BY EFL READERS WHEN THEY ARE READING

Schema Related Difficulties

Koda (2007) defines schemata, background knowledge, as “generalized information abstracted from a variety of instances” (p. 1). Depending on the studies of several researchers (Hudson, 2007), there is a direct relationship between schemata and reading comprehension.

For example, readers who have background knowledge about the topic of a text can understand the reading material better than the readers who do not have prior information of the topic. Generally, topics related to the target culture require a familiarity for the EFL readers to comprehend and decode the reading text as well as English-speaking readers (Jiménez, García, & Pearson, 1996).

In her study, comparing the cultural differences between L1 and L2 reading, Singhal (1998) focused on the variables such as content/background schema, formal/textual schema, and linguistic/language schema. Her findings revealed that L2 readers, without cultural background knowledge about an English text, have difficulty in comprehending the text message. She also claims that text structures differ depending on the language. As for the formal/textual schema, she emphasizes the importance of the familiarity of the language structure on understanding the reading material in terms of finding the clues of “cause and effect”, “question and answer”, and “compare and contrast”. Finally, she asserts that linguistic/language schema is also effective on the readers’ interpretation of the text. According to Singhal (1998), linguistic features of L1 may have an affect on the comprehension of an English text.

Vocabulary Related Difficulties

English language learners’ limited vocabulary is one of the most important problems they encounter particularly while they are reading (García, 2003). Readers need to develop their English vocabulary capacity in depth and width since vocabulary capacity is intertwined with reading comprehension (Hudson, 2007).

Most of the difficulties are due to the certain words in the English language that can have more than one meaning. They can be confusing for the learners if they do not take into account the contextual meaning of the word. One example is the word of “fall”. “Fall” in the following sentence, “I can fall with all this water!” means to descend to the ground. The same word in another sentence, “I had a fall at school” indicates failure in an exam. On the other hand, in the sentence, “Fall (Am. Eng.) is nice in the US,” “fall” means season of autumn.

Moreover, many English words were derived from other languages, such as Greek and Latin and have irregular rules in affixes. Affixes include prefixes (e.g., pre-, fore-) and suffixes (e.g., -ship, -ing, or -ese). They generally help English language learners to infer the meaning of unknown words. However, there are some exceptions that may confuse them. For example, “in- (or il-, im-, or ir-)” refers to “not” or “the opposite of something.” “Impolite” is the opposite of polite whereas “indifferent” is not the opposite of different. Therefore, English language learners, need to pay attention on each word since they may not always fit the rules of affixes.

First Language Related Difficulties

Reading in the first and second/foreign language has different processes (Carrell & Grabe, 2002). Especially low proficiency English learners translate the English text into their first language. Upton (1997), for instance, studied on two groups of (advanced and less advanced) adult Japanese students studying in an American University. They were asked to

think-aloud while reading an English expository text and allowed to use both Japanese and English during the comprehension process. Tape recorded think-alouds indicate that less advanced students used more Japanese language than the advanced students while reading. Though the less advanced group depended on the translation to confirm the meaning of the English passage and to decode the unfamiliar vocabulary, most of the advanced students focused on the content of the passage instead of translation. In other words, the advanced learners used the top-down skills, such as focusing on the whole text depending on the background information, whereas less advanced learners tended to focus on the bottom-up approaches, including smaller units such as vocabulary and grammatical structure.

The findings of Upton's (1997) study were in line with the findings found out by Anderson (1991) and Carrell (1989). They claim that, overuse of the bottom-up approach which readers try to translate all unfamiliar words into their first language, may cause the danger of misunderstanding the text.

PRINCIPLES FOR TEACHING READING

Nation (2009) offers some principles to design a reading instruction and practice programme.

Meaning-Focused Input

Reading instruction should cover various sorts of components since there are several purposes of reading. The objectives of reading can be listed as: to search for information (including skimming and scanning), to learn, for fun, to integrate information, to critique texts, and to write. In order to fulfill these aims teachers should be aware of the learner variables such as language proficiency level, personal, social and motivational differences. Reading materials should be selected and appropriately used regarding these learner variables.

Finally, the critical role of word recognition in reading should also be taken into consideration. For a full comprehension of a text "learners should read with 98 percent coverage of the vocabulary in the text so that they can learn the remaining 2 percent by inferencing from context". Nation (2009, p.6)

Meaning-Focused Output

Output hypothesis was emerged as a reaction to Krashen's input hypothesis and conveyed the "inadequacy of the input hypothesis" in terms of "explaining the effects of immersion education" (Nation, 2007, p.5). "The opportunities that output provides for learning however are not exactly the same as those provided by input" (Nation, 2007). According to Nation, output compensates the inadequacy of input by deliberately focusing on language features. According to meaning-focused output, language development means the development of the four skills. Reading should include other language skills. Therefore, a reading course should involve listening, speaking and writing activities related to the reading (Simcock, 1993; Nation, 2009).

Language-Focused Learning

Effective reading covers developing language skills and sub-skills and the language features including phonemic awareness, activities, phonics, spelling practice, vocabulary learning, using word cards, and grammar study (Nation, 2009). Some of this can be done through intensive reading and for improving these skills and sub-skills diverse reading strategies should be emphasized in FL classroom. These strategies were described by several researchers (Janzen & Stoller, 1998 and García, 2003) such as previewing, setting a purpose, self-questioning, making inferences, associating prior information, concerning text structure, criticizing and reflecting on the text.

Selection of the reading material is also important to achieve English language learners' reading outcomes. A range of text types, such as narrative text, expository text, descriptive text and literary text should be used for different purposes based upon students' needs and lesson objectives. Learners should also be assisted to analyze, synthesize, and critically evaluate the text.

Fluency Development

Developing fluency in reading depends on the familiarity of the reading material that does not include any unknown language features. Thus, speed reading practice is necessary both for word recognition and for reading for comprehension. Skimming and scanning, speed reading, repeated reading and paired reading activities are suggested by Nation (2007) for the fluency development. All these procedures are necessary for developing fluency in reading.

Table 1. Techniques and activities for teaching reading by Nation (2009)

The four strands	Activities and techniques
Meaning focused input	Reading graded readers, Listening to stories, Communication activities
Language focused learning	Direct teaching of vocabulary, Direct learning, Intensive reading, Training in vocabulary strategies
Meaning focused output	Communication activities with written input, Prepared writing, Linked skills
Fluency development	Reading easy graded readers, Repeated reading, Speed reading, Listening to easy input, 4/3/2, Rehearsed tasks, 10 minute writing, Linked skills

Another factor influencing fluency is the motivation of the readers. Learners' interests regarding their age, sex and other characteristic features should be taken into consideration to motivate them. Instead of boring and demotivating texts, interesting texts should be selected. They can be supported with various activities like storytelling, independent reading, and shared reading. Finally, habit of reading should be developed by monitoring and encouraging EFL readers through the use of extensive reading and issue logs.

READING SUB-SKILLS

As a systematic process, reading has various skills necessary for different reading purposes such as the kind of information and amount of information needed. Skimming, scanning and lexical inference skills will be discussed below since they have been identified as the most important ones by several researchers (Eisenberg, 2002 and Scrivener, 1994).

Skimming

Skimming refers to “reading fast or glancing rapidly through the text to get a main idea of what the text is about” (Simensen, 2007, p. 149). Identifying key topics or the overall theme of the text are the main concerns of skimming (Eisenberg, 2002; Scrivener, 1994; Davies, 1995 and Grellet, 1981). Additionally, scholars such as Harmer (1991), Grellet (1981) and Williams (1984) support that for having the general picture of the text; readers simply glance through the text quickly by discarding irrelevant or inessential parts. Through skimming, readers have the advantage of being able to focus on the main topic or idea of the passage besides some of the developing or supporting ideas. In other words, skimming involves reading of the titles, sub-titles, the subjects, verbs, topic sentences, conclusion parts of the paragraphs to get the gist of the text.

In skimming, readers should be asked to detect facts which are expressed in sentences rather than single words (Grellet, 1981). Some skimming questions could be suggested to the teachers to ask the learners by glancing quickly through the text such as:

- What is the text generally about? (the teacher may ask them to read the title, sub-headings and the introduction or lead-in paragraph)
- What is the probable topic of the text? (the teacher may give a list of topics)
- Which of these pictures (diagram), etc. illustrate the text? (the teacher may provide several visuals)
- What is the main idea of the text? (the teacher may remind them that the main idea of the text generally appears in the first paragraph of a text or in the first sentence of a paragraph)

Scanning

Scanning refers to rapid glancing of a text for finding out a particular piece of information (e.g., name, date) (Nattall, 1982). In scanning, the main aim is to speed up your reading just focusing on the specific fact or piece of information without reading everything. When scanning, readers only try to identify specific information by just letting their eyes wander over the text until they find what they are looking for (Grellet, 1981; Harmer, 1991 and Williams, 1984). For example, if a reader aims at doing the research for an oral presentation, he/she could scan the index of books, web sites, and reference materials whether they contain any information he/she seeks for.

There are several ways of teaching scanning as Nattall (1982) notes for teachers. For example teachers may ask the students:

1. to find the time a plane leaves from London for Turkey (using a page from an airport timetable). Do not forget to tell them to keep in mind the key words: “from London” and “to Turkey”.
2. to look at page X and find out when the World War I started (using a page from a text book).
3. to find out how many times the phrase “burst into tears” occurs on this page.
4. to identify in which paragraph the topic of “advantages of technology” is discussed.

Skimming and scanning are two techniques of rapid reading which are similar in process but different in purpose. Scanning is not a complete activity since it rapidly covers a great deal of material in order to locate specific isolated and scattered information. On the other hand, skimming is relatively a complete activity that requires readers to get the gist of the reading text with the purpose of getting a general overview of the content.

Lexical Inference

As it was mentioned in the previous section unfamiliar or difficult vocabulary is the main problem of foreign/second language readers which usually resulted with the inadequate comprehension of the text material. Several researchers of the field (Harley & Hart, 2000; Paribakht, 2004 and Qian, 2004) maintain that readers use a variety of strategies when they encounter new words in a FL text. Ignoring them, consulting a dictionary for the meanings, writing them down for further consultation with a teacher, or trying to infer their meanings from context are some of these strategies (Harley & Hart, 2000). According to Paribakht (2004) and Qian (2004), inferring the meaning of unknown word is the most common strategy among the others. Oxford (1990, p. 47) defines lexical inference as “using a variety of linguistic and non-linguistic clues to guess the meanings of all the words when the learner does not know them”. Lexical inference can be regarded as an important strategy for coping with unfamiliar vocabulary since it requires a deeper processing of information available in the text itself which helps the reader to comprehend the text as a whole (Read, 2000).

Using this strategy requires an awareness of some knowledge sources ranging from knowledge of grammar, morphology, phonology, and knowledge of the world, to knowledge of punctuation, word association, and cognates (De Bot, Paribakht & Wesche, 1997). Successful inference depends upon using various knowledge sources (Nassaji, 2003). Knowledge sources are the clues the students make use of during the inference process. For a successful inference, FL teachers should make the students aware of these clues namely taxonomy of knowledge sources and strategies. They should train them how to use various sources effectively for developing their lexical inference skills (Shen, 2009).

The positive effect of lexical inference strategies on reading comprehension have been supported by several researchers (Mondria & Wit-de Boer, 1991; Paribakht, 2004; Qian, 2004). Depending on these researchers’ studies it could be claimed that lexical inference is an advantageous reading strategy since it not only speeds up the reading such as skimming and scanning but it also improves the reading comprehension. Moreover, it could be claimed that

lexical inference enhances the vocabulary acquisition depending on the assumptions of some scholars (Mondria & Wit-de Boer, 1991; Gao, 2012) about the positive effect of the mental effort in processing a word.

Intensive and Extensive Reading

Exposure to print is efficacious regardless of the level of child's cognitive and comprehension abilities. Even children with limited comprehension skills will build vocabulary and cognitive structures through immersion in literacy activities (Stanovich et al. in Grabe, 2009, p. 313).

Intensive and extensive reading are two common approaches used both in native and foreign language teaching and learning. Brown (2001, p3. 12) defines intensive reading as “a classroom- oriented activity in which students focus on the linguistic or semantic details of a passage. Intensive reading calls attention to grammatical forms, discourse markers and other surface structure details for the purpose of understanding literal meaning, implications, rhetorical relationships, and the like.” In parallel with the Brown's definition Nation (2009) also points out that intensive study of a text helps students increase their knowledge of language features and control over reading strategies. According to Long and Richards (1987) since it is a kind of detailed analysis of a text, it is generally a classroom based and teacher-led activity.

Nation (2009) mentions another goal of intensive reading as the core point in determination of the syllabus of the course because the language features focused in the reading material will be the subject of the course. He goes on to claim that it has several positive aspects as the subject will be given in the communicative context of the text. On the other hand, he warns that the text may have a mixture of various vocabulary and structure, so teachers should be aware of this fact while choosing the text and he advises teachers to ask “How does today's teaching make tomorrow's text easier?” (p. 26) and recommends four strategies to put this principle into effect:

1. Focus on items that occur with high frequency in the language as a whole. Such items will occur often in many different texts.
2. Focus on strategies that can be used with most texts.
3. Quickly deal with or ignore infrequent items.
4. Make sure that the same items and strategies get attention in several different texts (pp. 26-27).

Hedgcock, et al. (in González and Paola, 2011 p.38) lists the significant features of intensive reading as in the following:

- The teacher selects the texts to be studied, introduces, and reinforces certain reading strategies by means of whole-class instruction and student activities.
- Students read the same text at the same pace and complete several exercises that facilitate understanding.
- Teacher and students have clarity about what to do before, during, and after reading.

- Pre-reading activities are decisive to facilitate comprehension. These activities include surveying the text, making predictions, asking questions, and introducing key vocabulary.
- While-reading activities include first reading, a “quick read-through the entire text to develop a sense of its main point(s) and to confirm initial predictions made during pre-reading” re-reading the text: “read the text intensively through a careful and focused second reading”, looking closely at language, and considering the structure of the text.
- Post-reading activities entail summarizing and responding, thinking critically, and reading-writing connections. “Post-reading activities offer the best opportunities for teacher assessment of student progress, as they make the internal reading process and its outcomes more transparent”.

Nation (2009, p. 28) lists the features of a good intensive reading exercise and gives the first feature by quoting Davies and Widdowson as “A good reading exercise directs the learners’ attention to features of the text that can be found in almost any text, or to strategies for dealing with any text, with the aim to develop in the language learner the ability to comprehend texts, not to guide him to comprehension of a text”. Second feature of a good reading exercise is to direct the learners’ attention to the reading text, which means students read the given text or part of the text to do the exercises. Third feature is to provide the teacher and the learners with useful information about the learners’ performance on the exercise. Finally “A good reading exercise is easy to make. Teachers have to choose texts suited to the particular needs of their learners, and if these texts do not have satisfactory exercises, the teachers must make their own” (p. 29).

According to the Nation’s list we can conclude that a good intensive reading exercise can be applied to any text, makes the learners read the text and gives teachers and learners an opportunity to check their performances and it is easy to prepare and apply in the classroom.

Day (2003) explains that “extensive reading is based on the well-established premise that we learn to read by reading.... In teaching foreign language reading, an extensive reading approach allows students to read, read, and read some more” (p. 1). Nation (2009) accentuates that reading is a source of learning and it can help students learn and be familiar with new words and structures. Similarly, Willis (2008) mentions that extensive reading provides students with opportunities to see the new words in rich contexts.

Nation (2009, p. 50) summarizes extensive reading practice as “It is a form of learning from meaning-focused input. During extensive reading learners should be interested in what they are reading and should be reading with their attention on the meaning of the text rather than on learning the language features of the text”. By quoting Elley and Mangubhai, Nation (2009) states that the extensive reading practice can take place inside the class or outside class. In their article Day and Bamford (2002, pp. 137-139) offer ten principles for teaching extensive reading:

1. The reading material is easy. That is, in order to have the desired effect reading texts should be within learners’ competence level.
2. A variety of reading material on a wide range of topics must be available.
3. Learners choose what they want to read.

4. Learners read as much as possible.
5. The purpose of reading is usually related to pleasure, information and general understanding.
6. Reading is its own reward.
7. Reading speed is usually faster rather than slower.
8. Reading is individual and silent.
9. Teachers orient and guide their students.
10. The teacher is a role model of a reader.

As can be seen from above principles, extensive reading provides teachers and learners with a great variety of materials; moreover, these materials can be selected by the learners, which make reading fun, and also the amount of input can be increased.

After stating that extensive reading not only increases the vocabulary, but also helps proficiency development, Nation (2009, p. 55) gives some suggestions for vocabulary development as follows:

- a) Before reading a text, the learner quickly skims it and selects five or six words to focus on while reading. This has the effect of raising consciousness about some words and thus making them more noticeable when they are met again in the text.
- b) While reading the learner can collect new words that are repeated in the text to put on word cards for later deliberate study.
- c) A more formal follow up to this is for learners to report to the class on a word that they met while reading—explaining what it means, how it was used in the text, its word parts, its etymology, and any unusual features about it.
- d) The use of a dictionary while reading should also have positive effects (Knight, as cited in Nation, 2009), although this tends to increase the time it takes to read a text (Hulstijn as cited in Nation, 2009).

In their studies Nation and Wang (as cited in Nation, 2009, p. 56) conclude that in an extensive reading programme:

1. Learners should read at least one graded reader every week, no matter what level they are reading at. This rate of reading allows unknown vocabulary to be repeated before the immediately previous occurrence is forgotten.
2. Learners should read at least five books at a level (say Level 2) before moving to books at the next level (Level 3). This number of books provides a chance for most of the vocabulary introduced at that level to occur.
3. Learners should read more books at the later levels than the earlier. This is because the vocabulary of the earlier levels occurs very frequently in the books at the later levels. Books at the later levels thus provide good conditions for learning all the vocabulary of the graded reader series.
4. Learners should read at least 15–20 and preferably 30 readers in a year. This number of graded readers provides plenty of repetition for the vocabulary and provides the opportunity to meet most of the vocabulary several times. A programme where learners read only three or four graded readers per year is not an extensive reading programme.

5. Learners should work their way through the levels of graded readers as the later levels provide excellent conditions for establishing the vocabulary of the earlier levels.
6. Learners may need to study directly the new vocabulary at the earlier levels or at least make use of a dictionary when starting to read books at a particular level. This is because the density of unknown vocabulary tends to be a little higher at the earlier levels.

In conclusion, reading should be enjoyable for both students and teachers so that they can share and discuss about what they read. Day and Bamford (2002) also state that if this happens, the classroom “can be a place where students and teachers experience together the value and pleasure to be found in the written word” (p. 140).

A SAMPLE ACTIVITY FOR INTENSIVE READING

This activity cycle is taken from Macalister (2011).

The title of the reading text is ‘Seeing the ocean’, adapted from Vukčević’1997. The intended learners for this cycle are intermediate adult learners, and the language-focused learning goal is to recognize the ways in which reference words (pronouns) operate within the text.

Pre-Reading

These suggestions are intended for the teacher. The teacher asks questions about the learners’ experiences of visiting a foreign country/city for the first time.

1. Begin by drawing on the learners’ own experiences. Did they go to the foreign country/city by plane? Did they stop anywhere on the way? Where? What was the first thing they saw or thought or felt when they arrived?
2. Tell the students they are going to be reading one man’s account of his first impressions when he arrived in New Zealand. Everyone has different experiences. Ask them what sort of questions they might have before reading. Write the learners’ questions on one side of the board.
3. Tell them the title of the text. Write it on the top of the other side of the board. Ask them what words and ideas they associate with the word ‘ocean’. Record their answers.
4. Ask the students to work in small groups to put the words associated with ‘ocean’ into categories.
5. Hand out the reading text. Tell the students to read it with their questions from (2) in mind. Tell them they will be talking about these questions after they have read the text

Reading

The learners receive the text

Seeing the ocean

by Vuk Vukčević

1. I want to write about my first impressions of New Zealand—maybe **you**
2. can't even dream about my feelings at my very first step in your country.
3. I awoke in the aeroplane just a few seconds before I could see the top of
4. the North Island. I saw a lovely blue-green surface of ocean, shining in the
5. afternoon sun. **It** was stunning.
6. Auckland was the first city that I saw in New Zealand—just for a few
7. seconds. We had to go to Wellington. The airport seemed small to me
8. compared with airports in Belgrade, Singapore, Bangkok
9. But air! Air was the first thing I saw and felt in your beautiful country. **It** is
10. so clear and fresh and I remember my first breath here—I felt like a new
11. born child
12. My arrival here is a new birth for me. Learning the language is a step
13. forward. I am like a nine-month-old baby. When I reach eighteen months,
14. I will be a good English speaker.
15. Seeing the ocean close up was a second step. I like the ocean a lot, and
16. one day I chose to meet it; saying hello, touching the little waves on the
17. beach, and trying to see if **it** is very salty. Happiness for me is being able to
18. see the ocean, hear seagulls calling in the early mornings, spend summer
19. nights with my family looking at the calm, dark ocean surface from the
20. lawn and feeling the stillness of the world.
21. Sometimes, the starry sky seems so close to the earth that I can touch the
22. shining of a star's light. **We** are just sitting, without words, listening to the
23. silence of the night.

After Reading

1. Ask the learners about their reaction to the text. Did they enjoy it? Did they find answers to any of their questions?
2. Tell the learners you are now going to give them five true/false questions to answer. Ask them to read the text again to answer the questions.

He is writing this story for his family.

T () F ()

He thought the afternoon sun was stunning.

T () F ()

He thinks the air in New Zealand is fresh and clear.

T () F ()

He wanted to find out if the ocean is salty.

T () F ()

He likes to sit and look at the ocean by himself.

T () F ()

3. Before checking the answers with the learners, write the following line numbers and pronouns on the board. Ask them to identify what each pronoun refers to.

Line 1	you	_____
Line 5	it	_____
Line 9	it	_____
Line 17	it	_____
Line 22	we	_____

4. Once the students have done this, ask them to check their answers to the true/false questions. Then discuss the answers and how the learners have arrived at them.

CRITICAL READING FOR EFL TEACHERS AND LEARNERS

In our world today, by the advance in the technology and internet, specifically via smart phones, we can reach any kind of information easier than ever before. Not only can we reach the information but others can also reach us. They can share their thoughts, claims, and arguments via e-mails and social media. In other words, we are all surrounded by a very great amount of information claiming they are true. They may try to persuade and make us accept their thoughts or claims by playing on our feelings, likes, dislikes, fears and so on. Thus, as teachers we should make our students be aware of this fact and teach them how to read critically.

The word *critical* is often misperceived as having negative sense. As Nosich (2011) mentions *critical person* is not the person who always finds faults or to *criticize* does not always mean saying negative things. But actually, it is related to the word *criteria* and it is clearly explained by Goatly (2000) as “resisting the assumptions on which rational arguments are based, by explaining and questioning how common-sense logic establishes its categories” (p.1). In order to handle and analyse a text critically Fairclough (as cited in Goatly, 2000) offers three levels of text analysis: (1) decoding the surface structure and the meaning of a text, (2) interpreting and inferencing what is written (or said), (3) explaining the ideology behind the text or discourse. In order to read a text critically and explain the ideology, it is important to learn how to ask probing questions. To be able to ask hard-hitting questions we need to acquire and develop some necessary knowledge.

DISTINGUISHING BETWEEN FACT AND OPINION

To be able to recognize the facts and opinions in a discourse is a crucial skill for reading and analysing a text critically. As a receiver we cannot criticize the facts but we should be alert that some personal thoughts might be served us as facts. At this point distinguishing between fact and opinion carries out an important role. To start with the definitions of facts and opinions will help us discriminate them. Rasool, Banks, and McCarthy (1993) mention three definitions of ‘fact’ as:

1. A fact is something most of us agree is true.
2. A fact is something that is true.
3. A fact is something that can be proven beyond a reasonable doubt (pp. 68-69).

Similarly, Fahnestock and Secor (1990), Swinburne and Warner (1992), Pirozzi (2003) and Starkey (2004) define fact as something that can be verified, or confirmed in an unbiased manner and when it is verified, we must accept it.

On the other hand, an opinion is subjective and they depend on the people's individual beliefs and thoughts. An opinion represents personal point of views. Pirozzi (2003, p. 371) explains this notion as "Someone's personal judgment about something that has not been proved, verified, or confirmed in an unbiased manner."

Opinions may be based on facts, but they are still what we think, not what we know. Opinions are debatable; facts usually are not. A good test for whether something is a fact or opinion is to ask yourself, "Can this statement be debated? Is this known for certain to be true?" If you can answer yes to the first question, you have an opinion; if you answer yes to the second, you have a fact. If you're not sure, then it's best to assume that it's an opinion until you can verify that it is indeed a fact (Chesla, 2005, p. 28).

To see the difference clearly, consider the following examples:

1. World War I broke out in 1914.
2. Sydney is the capital city of Australia.
3. Many experienced mechanics tell us that Audi is the best car today.
4. This is the scariest movie of this year.
5. The summers in Gaziantep are horrible because they are always very hot.
6. İnönü, who was the second president of Turkish Republic, was a great leader.

When we consider the above examples in the light of the definitions, we can easily say that the first two sentences are facts (although the second sentence is false) because they can be verified by a little research. On the contrary, sentences three and four are simply opinions because both sentences have superlative forms which can change from person to person. In the last two sentences the hotness of Gaziantep and the second president of Turkish Republic can be verified; however, the adjectives 'horrible' and 'great' are simply subjective, so we can say that these sentences are combinations of facts and opinions. A person might like very hot climate and it would be wonderful for him/her. Similarly, some people would agree that İnönü was a great leader while the others disagree.

There are some words that signal the opinions and make it easy to identify the opinions in a text or speech. These are:

Believe/Think	Best/worst	Expect
Feel	In my opinion	Least/most (with adjectives)
May/may not	Might/might not	My impression is...
My perspective is...	My point of view is...	My sense is...
Possibly	Probably	Should/should not

In summary, we should bear in mind that the first step to critical reading is to differentiate facts from opinions. When we notice there is an opinion, we can talk about an argument and then we can ask thought-provoking questions or we can object to them if there is any faulty.

SAMPLE ACTIVITIES FOR FACT AND OPINION

Activity 1. Decide whether the following sentences are Facts or Opinions

1. ____ Penguins live in the South Pole.
2. ____ Some universities have over a hundred thousand students in Turkey.
3. ____ The students who have flue should stay at home instead of going to school.
4. ____ Vegetables can be kept fresh for some time in a fridge.
5. ____ Ronaldo scored the most goals this season.
6. ____ Spring is the prettiest season because many flowers are blooming.
7. ____ Smoking is an irritating habit.
8. ____ Mr. Steward is sixty years old.
9. ____ I think Schumacher has been the best goalkeeper ever in Turkey.
10. ____ Rollercoaster is scary, but it's also a lot of fun.

Activity 2. Highlight facts and underline opinions in the following paragraph.

Samuel Fernando Gonzales lived in New Jersey and was a senior student at Michigan Institute of Technology. He was the leader of gang called “crimebusters”. He was very brave and fought with crimes with his intelligent tactics. He was also handsome, many girls admired him. He was killed by an accident at the age of 24.

RECOGNIZING AND EVALUATING ARGUMENTS

Like the word critical, argument is generally misunderstood similar to having debate or quarrel as in “I had an argument with my mom last night”. Conversely, in critical reading, argument means stating the claims and supporting them with some reasons and evidence. A broad definition of argument is given by Copi and Cohen (2004) as:

A collection of propositions in which some propositions, the *premises*, are given as reasons for accepting the truth of another proposition, the *conclusion*. In other words, the *conclusion* of an argument is the proposition that is affirmed on the basis of the other propositions in the argument. These other propositions, which are affirmed (or assumed) as providing support or reasons for accepting the conclusion as true, are the *premises* of that argument (p. 3).

As seen in the definition, an argument has two parts, one of which is a premise or premises supporting the other part, namely conclusion. So as to critically examine and evaluate an argument, we should be able to realize the existence of an argument in a discourse first. Walton (2006) states that “The ability to identify an argument by stating its premises and

conclusions is a very valuable skill of critical argumentation. Only when an argument has been thus identified can it be critically examined in a clear and objective fashion” (p. 7).

The order of the premises and conclusion may change; in other words conclusion may be stated at the beginning or at the end. There are some words that signal premises and conclusions and they are called as premise and conclusion indicators in several references. A compilation of these indicator words from different resources are listed below (Bowell & Kemp, 2002, 2005; Boyd, 2003; Copi & Cohen, 2004, 2005; Hurley, 2000; Jason, 2001; Walton, 2006):

Premise Indicators

as	as indicated by	as shown by
assuming that	because	due to
follows from	for	for the reason that
given that	in view of the fact that	inasmuch as
insofar as	may be deduced from	may be derived from
may be inferred from	my evidence for this	my reason is
on the assumption that	owing to	seeing that
since	the reason is that	this is so because

Conclusion Indicators

accordingly	therefore	consequently
hence	so	then
thus	as a result	in summary
in consequence	it follows that	entails that
proves that	it is clear that	for this reason
for these reasons	I conclude that	we may infer
which entails that	which implies that	which means that
bears out to the point that		leads me to believe that
suggests very strongly that		which allows us to infer that
which points to the conclusion that		which shows that

In the light of the given indicators we can consider these examples:

- You should graduate from college because you will earn more money with a college degree.
- The need for the United States to send troops to Central America is indicated by the build up of armed rebels in countries neighboring those with civil wars.
- Seeing that the current policy of supplying organ transplants is benefiting the rich, a new program is needed.
- Based on all of the reasons just stated, we can *conclude that* the flow of illegal drugs must be stopped.
- *In summary*, postal rates must be increased because we can no longer afford to run the postal system with a deficit.
- We have had very little rain this season. *Consequently*, water will have to be rationed.

In the above examples underlined words show the premises of arguments, on the other hand italicized words show the conclusions. These indicator words can help us to determine the parts of arguments; nonetheless, Jason (2001) warns us that these indicator words do not always signal an argument (p. 37). For example: I have been working here since 2005. Besides, there may be arguments without indicators or even without premises or conclusions and they want us to deduce it. E.g., this shampoo makes my hair feel so soft. In this example, there is an argument, that is, this shampoo makes my hair soft and it will make your hair soft, too. Therefore you should use it.

After identifying arguments, we should evaluate and be critical about them. As Hurley (2000, p. 1) states, arguments can be classified into two basic groups. The first group includes the arguments whose reasons actually support the conclusion and the other includes the arguments whose reasons do not. The first group is called as good (cogent) arguments, and the latter is called as bad (fallacious) arguments.

CONCLUSION

Reading is not simply a matter of absorbing individual words; rather, it is a progressive effort to construct a model of the meaning of the text (Armbruster, as cited in Kurfiss, 1988, p. 32). The expression ‘reading between the lines’ has been developed for this reason. As Kahane and Cavender (2006) explain that “this phrase has several meanings one of which captures the idea of understanding the intentions which are not clearly expressed. The other meaning is getting more information from less, and noticing the rhetorical devices” (p. 13). Wallace and Poulson (2004, p. 7) illustrates the critical approach to reading as follows:

Table 2. A critical approach to reading

As a critical reader you:	
✓	consider the authors’ purpose in writing the account
✓	examine the structure of the account to help you understand how the authors develop their argument
✓	seek to identify the main claims the authors make in putting forward their argument
✓	adopt a skeptical stance towards the authors’ claims, checking whether they support convincingly what they assert
✓	question whether the authors have sufficient backing for the generalizations they make
✓	check what the authors mean by key terms in the account and whether they use these terms consistently
✓	consider whether and how any values guiding the authors’ work may affect what they claim
✓	distinguish between respecting the authors as people and being skeptical about what they write
✓	keep an open mind, retaining a conditional willingness to be conceived
✓	check that everything the authors have written is relevant to their purpose in writing the account and the argument they develop
✓	expect to be given the information that is needed for you to be in a position to check any other literature sources to which the authors refer

Thorndike (as cited in Nielsen, 1989, p. 2) claims that critical reading is a form or instance of critical thinking which is consistent with the more general assumption that reading

is thinking. Since thinking is an active process, it can be said that reading is also active; actually, reading must be active not to be deceived.

In summary, it can be said that as critical readers and teachers we should know how to unearth senders' intentions which are committed particularly to persuade others, and try to model our students develop an understanding of critical reading and also listening.

FURTHER READING

Copi, I.M., & Cohen, C. (2005). *Introduction to Logic* (12th ed.). New Jersey: Pearson Prentice Hall Education, Inc.

Carter, K.C. (2004). *A First Course in Logic*. New York: Pearson Longman Education.

Nation, I.S.P. (2009). *Teaching ESL/EFL Reading and Writing*. New York: Routledge. This reference book is a useful source for teachers who teach reading in foreign language classrooms. The first six chapters of the book are devoted to reading, specifically, the first chapter deals with learning to read in another language.

Starkey, L. (2004). *Critical Thinking Skills Success in 20 Minutes a Day*. New York: Learning Express LLC.

All these three books give explicit and clear information about critical thinking and reasoning, and these books offer some classifications for reasoning fallacies. The last book also has practical exercises for classroom use.

SAMPLE LESSON PLAN

A SAMPLE LESSON for FACT and OPINION		
Type	An inductive approach to the teaching of identifying facts and opinions in written texts	
Goals	Students will have - distinguished between facts and opinions in written texts - developed an insight in identifying whether a statement is a fact or an opinion - recognized signal words commonly found in facts and opinions	
Materials	Written text samples. PowerPoint slides.	
Teaching Modes	Group work, lecture, classroom discussion	
Time	45 + 45 (90 minutes approximately)	
Procedure	Pre	1. Students are given three sets of five sentences and asked to determine which one of five sentences is different from others.
		2. Students are asked to determine what makes the sentence they have chosen different from those of others.
	While	3. The answers are elicited by using guided discovery method.
		4. The students are introduced to definitions of facts and opinions.
		5. The students are exposed to some of the common signal words utilized in fact and opinion sentences.
		6. Students are given new sentences to be identified as fact and opinion by referring to the key signal words.
	Post	7. Students are given some fact sentences and asked to turn them into opinions.
		8. Students work in groups of four. Each group is given a written text to be analyzed in terms of fact and opinion statements.

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Chapter 65

TEACHING GRAMMAR

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. identify the significance of grammar in language teaching.
2. familiarize with the different ways of teaching grammar in the language teaching classroom.
3. list advantages and disadvantages of these different approaches.
4. familiarize yourself with different techniques of teaching grammar.

STUDY QUESTIONS

1. What is the role of grammar in language teaching? Is it necessary to teach grammar?
2. What are the different ways of teaching grammar in the language classroom?
3. How would you prefer to learn the grammar: from examples or rules?

INTRODUCTION

In the language classroom, one of the most important parts of being a teacher is presenting new language, supplying some opportunities to practice it and make revisions when necessary. Whether to teach grammar or not has always been a controversial issue among researchers and practitioners of language teaching. Even though it is acknowledged that people learn languages differently, the process of learning becomes easier if they are able to perceive regularities and patterns (Gower, Philip & Walters, 1995). However, we are all

familiar with students who are really good at identifying grammatical structures and who can list the basic usage related to each of them but who cannot use them in real communication. As suggested by Larsen-Freeman (2001), grammatical knowledge is important as long as it enables learners to communicate “correctly, meaningfully and appropriately”. In order to emphasize the inadequacy of form-based teaching and going beyond form, she suggested her three-dimensional framework including “form”, “meaning” and “use”. Larsen-Freeman (2001) pointed out that if students are not aware of the fact that grammatical structure has these 3 dimensions, they are prone to making mistakes even if they know the rules of the target language. In order to explain the connection between these dimensions, Savage et al. (2010) give the following example:

Form:	MUST + the base form of the verb (infinitive without to)
Meaning:	obligation or necessity
Use:	formal, used much more in writing than in speaking. In speaking, people tend to use “have to”.

According to Freeman’s this three-dimensional framework, when students are aware of all these three dimensions of modal verb “MUST” in English, they will be able to use it correctly, meaningfully and in appropriate situations.

The Place of Grammar in the History of Language Teaching

Grammar has always been considered to be an important component of language since the emergence of first language teaching methods. In the 19th and mid-twentieth century method, *The Grammar-Translation Method (GTM)*, grammar rules were taught explicitly and a lot of attention was paid to language forms. However, because of the lack of communicative practice, students were not able to use them successfully. For this reason, a new method appeared in the first part of the 20th century, which was *The Direct Method*. In this method, grammar was taught inductively, which was found to be inappropriate for some adult learners; therefore, led to failure.

Between 1950s and 1960s, *Audiolingual Method* appeared which emphasized the importance of developing aural-oral skills. In Audiolingual Method, the syllabus was structural and there was the use of drills to reinforce grammatical patterns. Students were really good at these drills; however, when it came to producing new sentences, they were not able to transfer their classroom skills into the outside world. In 1970s, in *Cognitive Approach*, it was claimed that grammar needed to be taught either deductively or inductively because it was considered to be an indispensable part of the language learning process. But again communicative practice was neglected. In 1980s, *Natural Approach* appeared thanks to the theories of Stephen Krashen. First language acquisition was taken into consideration and it was thought that grammar should not be taught overtly; instead necessary input should be supplied so that learners can grasp the grammatical structures from this oral and written input. However, many adult learners wanted and needed grammar instruction; that’s why, it was not very effective.

While the discussions related to Cognitive Approach and Natural Approach were going on, in 1970s, other important methods, the influence of which is still going on, appeared. It was *Communicative Language Teaching (CLT)*, in which communication was the main goal of instruction and for the sake of this communicative focus, grammar was ignored. Because fluency was important, some students could never master the grammar of the target language.

As can clearly be seen from the important changes mentioned above, the role of grammar was either over-emphasized or it was neglected and both of these attitudes might be observed in the written works of educational researchers and practitioners. As suggested by Hedge (2000), if it is believed that there is a necessity of a focus on grammar, the following issues will be related to integrating grammar teaching into a communicative methodology paying attention to all aspects of communicative competence and the precise forms that teaching should take. Hedge also states that there will also be some further questions about the choice of grammatical structures to be presented, the forms of grammatical description, whether to use 'deductive' or 'inductive' approaches, the role of practice and the forms of practice appropriate for different types of learners.

Major parts in a grammar lesson consist of the following:

PRESENTATION

TASK 1: Think of the grammar presentation techniques you know. In your opinion, which one has got most benefits and why?

TASK 2: Choose one of the grammar topics given below and think of a technique that you use to present it to your students:

- the difference between SOME and ANY
- Tag Questions
- the difference between Simple Past Tense and Past Continuous Tense

Your lesson must last 10 minutes only. While preparing your mini-lesson, please think about the aims of your presentation, the stages of your presentation and effective techniques of presentation.

(adapted from Tanner and Green, 1998)

Deductive vs. Inductive Grammar Presentation

In deductive (explicit) grammar presentation, the teacher states the name of the grammar topic to be studied and explains it. The teacher first says, "Today we are going to study Present Continuous Tense". After introducing the subject, the teacher usually writes the conjugation of the words on the blackboard and asks the students to copy them to their notebooks. After mastering this part, sentence level examples are provided in various forms. A chain of drills is followed after this process. The drills start from simple and go further to more complex structures. Finally, some production exercises can be used with higher

proficiency levels. This sequence is also named as the PPP (Presentation-Practice-Production) Model.

Hedge (2000) explains the purpose of the each stage of activity and the teacher's roles in the model given above in the following way:

Stage	Purpose	Teacher's roles
Presentation	– to present new language in context so that meaning is clear – to link the new form to what students already know – to check comprehension	Instructor Corrector
Practice	– to help students memorize the form – to give intensive practice through repetition – to provide opportunities for feedback and error correction – to develop confidence	Manager Evaluator Corrector
Production	– to reduce control and encourage students to find out what they can do – to encourage students to use the forms in expressing their own content – to help students see the usefulness of what they have learnt – to check what has been learnt and diagnose problems	Monitor Resource Diagnoser

According to Widodo (2006), advantages of deductive approach in grammar teaching are as follows:

1. It is time-saving.
2. Rules are simply and clearly explained
3. Immediate application of the rules through direct examples is provided.
4. It respects the intelligence and maturity of the adult learners
5. It meets the expectations of those learners who have analytical style

Inferring the grammar rules according to some examples provided is the main premise of an inductive approach. This is also how most native speakers acquire the syntax of their own languages. It is also called rule discovery learning (Widodo, 2006). Direct Approach and Natural Approach followers would use it frequently. Thornbury (2002, p.65-66) provides the following example of inductive grammar presentation.

TEACHING VERBS THAT TAKE BOTH GERUND AND INFINITIVE FORMS USING CONCORDANCE DATA

One persistent headache for learners is knowing which verbs in English are followed by the infinitive. This problem is complicated because sometimes both are possible with a subtle difference in meaning. In this sample lesson, the teacher has decided to use concordance data to guide the students towards discovering these differences for themselves.

STEP 1: The teacher divides the class into three groups (A, B, and C), and gives each group a different set of concordance lines as shown here:

Group A: *Remember*

REMEMBER (19:26, 07.05.98)

d Yanto, thoughtfully. On the other hand, I *remember* seeing them dancing together at a ball shortly before the month's Top to Tail if you own a poodle. *Remember* to listen out for Katie and friends on Radio 2. Should you here wasn't anyone to see me go. I *remember* thinking how white and cold her face looked, with ve food started to decrease in September, so *remember* to feed fish. Remember to check on them from time to ti t remember being so unhappy - not ever. I *remember* being in La Scala, Milan during the war. In the early 40s her to a colliery tip about four miles away. I *remember* going to a fruit and flower market in Leeds very early one what I can do but it's all working. Oh I must *remember* to take that film out. Is that the finish of it total? All I rem (which doesn't mean there weren't any). 'I *remember* seeing pictures of a fish like that at school, but I'm damn was working in Worcester. 'I don't seem to *remember* seeing you in church, Bridget,' said Clare. The last thing ber to feed him,' so I'll just have to *remember* to bring an electric drill up and see what I can do but it's i ehudi Menuhin was in town for a concert. I *remember* being rather keen on Bert when I was about fifteen. Whe

Group B: *Forget*

FORGET (18:53, 07.05.98)

ernment last year announced that those who *forget* to flush public toilets will be fined up to US dollars. Results frothy fronds lit up by evening sun. I'll never *forget* seeing your Grandfather for the first time. I couldn't believe acting inspector over the weekend. I'll never *forget* being in hospital. s are getting shorter it doesn't mean you can *forget* having a bit of fun in the garden. Results of your search Yo othes. For instance, if you load Windows, but *forget* to take the mouse out of the bag, you can just clip the Tosh live alone. If you are leaving the area do not *forget* to pick up any clothes that are at the cleaners, or shoes, e, where shamrock fans forget to blur. Don't *forget* to put your clocks back tomorrow night. Once the removal o our or two watching TV together. She hadn't *forgotten* going to the pictures with Vernon to see The Song of Pa y solutions found for this query M. B. I never *forget* being called by a superintendent who said: 'Sergeant Bullo to add more volume of food daily. I must not *forget* to say something to the whole school about her.' Don't corr forget to bring music. 'Now eat up and don't *forget* to take your litter home with you.' If there is anything else yo

Group C: *Stop*

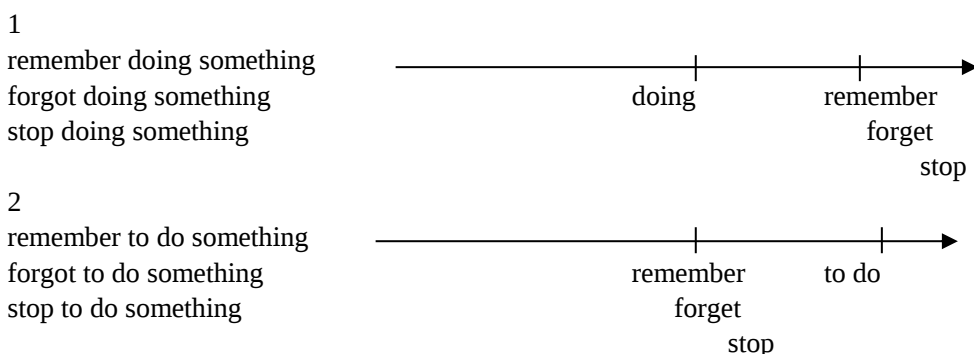
STOP (19:18, 07.05.98)

tense, listening. At the age of twelve, Bailey *stopped* eating meat. Although he had already taken his first mout though Anna was sure her mother had not *stopped* having baths or using perfume. Annabel was determined asthma? And it was two o'clock when they *stopped* talking, they *stopped* having their break! Results of your s s of Ron's hard training schedules. I finally *stopped* going to school when Charlie did, and Eva arranged for m ould appreciate it if the two gentlemen who *stopped* to help me when I had an accident with my car on the roa these last two days,' she told him when he *stopped* to greet her and ask if she had heard the brilliant spontan day I was filling up with petrol when a chap *stopped* to say he was a member of the Ferrari Owners Club and examine his reflection in the mirror. The bus *stopped* to pick up a passenger off one of the first terraced streets to the newspapers, but Mr Carter has never *stopped* believing he could solve the world's problems. But Joy defeat as gracefully as he could. Churchill *stopped* to take a cigar from the flap pocket of the one-piece siren he idea that had flitted through his mind. He *stopped* eating and reached across and took his wife's hand. I'd st

She tells the groups to study their lines, and divide them into two patterns. If they find it difficult, she suggests that they look at the form of the verb that immediately follows the word in the central column of each set of lines. They are then instructed to try to work out the differences in meaning between the two patterns, still in their groups. The teacher monitors the group work, offering assistance where necessary.

STEP 2: The teacher then re-groups the class so that at least one member of each of the former groups A, B, and C, is in each of the new groups. Their task is to explain to each other the patterns of form and meaning that they have found for their particular verb, and then, as a group, to work out a general rule that holds for all three verbs. They then report to the class.

STEP 3: The teacher summarizes by drawing the following timelines:



In order word, in the case of **1** the *doing* precedes the *remembering*, *forgetting* and *stopping*. In the case of **2**, this sequence is reversed.

STEP 4: To check their grasp of rule, the teacher then hands out a discrimination exercise. For example:

1. I went to the post office but I forgot *to post/posting* the letter.
2. I don't remember *to see/seeing* the Millers at the party.

Previous literature on inductive and deductive approaches to teaching grammar also highlights the advantages and disadvantages of these approaches. For example, Widodo (2006) lists the following advantages and disadvantages of an inductive approach to grammar.

TASK 3: Choose a grammar topic and prepare a similar lesson plan based on the one above. You can make use of the following websites to reach examples from corpus:

www.americannationalcorpus.org

- www.natcorp.ox.ac.uk
- corpus.byu.edu
- www.americancorpus.org

Advantages

1. Learners are trained to be familiar with the rule discovery; this could enhance learning autonomy and self-reliance.
2. Learners' greater degree of cognitive depth is "exploited".
3. The learners are more active in the learning process, rather than being simply passive recipients. In this activity, they will be motivated.
4. The approach involves learners' pattern-recognition and problem solving abilities in which particular learners are interested in this challenge.
5. If the problem-solving activity is done collaboratively, learners get an opportunity for extra language practice.

Disadvantages

1. The approach is time and energy-consuming as it leads learners to have the appropriate concept of the rule.
2. The concepts given implicitly may lead the learners to have the wrong concepts of the rule taught.
3. The approach can place emphasis on teachers in planning a lesson.
4. It encourages the teacher to design data or materials taught carefully and systematically.
5. The approach may frustrate the learners with their personal learning style, or their past learning experience (or both) would prefer simply to be told the rules

A caveat we should keep in mind is the fact that most skilled teachers use both approaches efficiently while teaching grammar. They sometimes present the grammar rules explicitly (deductive) and in some other occasions, they help their students discover the grammar rules from the examples provided. The combination of the both approaches is also used in Grammar Based Teaching (GBT) which uses grammar as a springboard for meaning, communicative practice opportunities (Azar, 2007).

DISCOVERING GRAMMAR

Instead of starting teaching grammar by introducing the rules, making students work out for themselves how language forms are constructed and used is another possibility in teaching grammar. Afterwards, students might be asked to do exercises related to that specific grammar rule. There are multiple ways of doing this such as starting the lesson with examples, with a reading passage, with a listening exercise including a dialogue which contains the target grammar rule, etc.

In the following example, students are given a short reading text and they are supposed to identify the target grammar form, which is "The Simple Past Tense", and then, a practice part follows:

Reading Text

Students read the text above in pairs and they are asked to underline the structures that they are not familiar with and then, to work out the rules of The Simple Past Tense in English. Afterwards, the teacher states that there are two types of verbs in English; namely, ‘regular’ and ‘irregular’. Students are also asked to identify which verbs in the text are regular and which of them are irregular. And then, practice activities follow.

When I woke up this morning and opened the door, I found a letter coming from my aunt. In the letter, she said she was in Hawaii for vacation. She also wrote that she liked the island very much; she swam in the sea, sunbathed on the Waikiki Beach and took part in some local tours around the island. And then she wrote about the friendly people of the island. After reading the letter, I really wanted to see this island. I called my travel agent and wanted him to book a flight for me. Afterwards, I booked a hotel room for a week for myself. I feel really excited because I am going to join my aunt and spend good time in that place.

PRACTICE

After the presentation part is over (either deductively or inductively), there is a need for students to practice the newly-learnt items. In this part, as also suggested by Hedge (2000), students not only find the chance to get some feedback from the teacher in order to reformulate their utterances, but they also develop confidence. However, not all the activities are appropriate for the practice part. Thornbury (2002) mentions two important principles that should be kept in mind:

THE E-FACTOR (Efficiency= Economy, ease, efficacy) The efficiency of an activity might be discerned via answering the following questions: - How time-efficient is it? - How easy is it to set up? - Is it consistent with good learning principles?	THE A-FACTOR (Appropriacy) The appropriacy of an activity pays attention to the following concepts: - learners’ needs and interests - learners’ attitudes and expectations
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GRAMMAR GAMES

Use of games in grammar teaching is a recently trending issue. There are volumes of books that specifically focus on the issue of grammar games (e.g., Rinvolucris & Davis, 1995;

Johnson, 2003). Many games from television and radio as well as games people play at home in their everyday lives can be adapted for classroom use as well (Harmer, 2007). Many experienced teachers can also prepare some grammar games with ease. The following sample is adapted from Harmer (2007).

Asking the right question

Language Level: Any

Age: Older children (+)

Level: Elementary (+)

Instructions: Students sit in two teams. There is a pile of cards between them. On each card there is a word or phrase. The cards are face down.

A member of team A picks up the first card and then has to ask the other team members questions until they give the exact answer that is written on the card.

university	teaching	hot	summer	Yes, I did
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The focus: The game should push students to think extremely carefully about the exact construction of the questions they are asking.

CONCLUSION

Two questions are commonly asked about teaching grammar: Should we teach grammar or not? and How we should teach grammar? The issue of teaching grammar or not is a hot debate and addressing it requires a theoretical focus which was not the scope of this chapter. Instead, in this chapter, we tried to focus on the intricacies of how we should be teaching grammar. Advantages and disadvantages of different approaches to grammar have been highlighted by presenting various examples.

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Chapter 66

INTEGRATED SKILLS IN LANGUAGE TEACHING

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. define the concept of integrated skills as it currently applies to language teaching.
2. identify various types of and approaches to integrated skills instruction.
3. design and evaluate practical activities for implementing integrated skills into your lesson plans.

STUDY QUESTIONS

Before you start reading this chapter, try to reflect on the following questions:

1. What does integrated skills in language teaching refer to?
2. What might be some reasons for using integrated skills in a language curriculum?
3. What are some principles and techniques for designing lessons based on integration of various skills?

INTRODUCTION

Realistically, how often do you talk without listening? Or write without reading? For just about most situations we can imagine from our daily lives, several language skills are used simultaneously for communicative purposes. In the past several decades, much evidence has emerged that, in order for learners to attain competence in a language, teaching needs to integrate both linguistic and communicative skills (Hinkel, 2009).

Rebecca Oxford compares the idea of teaching English as a second or foreign language (ESL/EFL) to the image of an intricate tapestry woven from many strands which include the teacher, the learner, the setting, and the primary language skills of listening, reading, speaking, and writing (Oxford, 2001).

The skill strands of the tapestry lead to optimal ESL/EFL communication when the skills are all interwoven during instruction, a practice known as the integrated-skills approach. In other words, when several of the language skills are utilized within a lesson or activity, more authentic communication and more effective and meaningful learning occurs. A typical instructional paradigm found in many locations around the world focuses on employing learners' receptive skills in order to provide input and modeling for their productive skills. For instance, in the spoken medium, listening selections are used as models for speaking, interaction, or pronunciation skills, whereas in the written medium, reading input provides models for writing. The central innovative characteristic of the communicative approach in ESL or EFL teaching has been the integration of the four primary skills and their components.

Communicative Language Teaching (CLT) emphasizes the teaching of listening, speaking, reading, and writing within content and task-based activities (Richards and Schmidt, 2002). Prior to communicative language teaching approaches, the prevalent attention to the grammatical forms of language prompted curriculum designers and instructors to focus on the separate language skills, a practice referred to as the segregated-skill approach. Many pre-university intensive skills courses still use a separate skills approach, probably mostly due to administrative considerations, which make it easier to program separate courses. In the segregated-skill approach, the mastery of discrete language skills such as reading or listening is perceived as the key to successful learning, and language learning is typically separate from content learning (Mohan, 1986). Specialized, subject-specific courses may be practical when meeting the needs of higher proficiency learners who might need to focus their attention on improving one specific skill.

However, if communicative, interactive use of the target language is the primary objective, then skill integration is, according to Brown, "the only plausible approach to take" (Brown, 2001). The four macro skills (listening, speaking, reading and writing) are all an integral part of typical language proficiency and use. Separating the core skills is counterintuitive to the integrated way that people use language skills in natural communication, and it conflicts with the direction in which language teaching experts have been proceeding in recent years.

Research indicates that even if it were possible to fully develop one or two skills in the absence of all the others, such an approach would not ensure adequate preparation for future success in academic communication, career-related language use, or everyday interaction in the language. "Despite our history of treating the four skills in separate segments of a curriculum, there is a recent trend toward skill integration" (Brown 2001). Even if a course title indicates a discrete skill such as "Academic Reading," for example, it would be more beneficial to integrate various skills in addition to the primary focus on the reading component. For example, in preparation for reading a text, the instructor could facilitate an activity in which the students employ their speaking and listening skills by activating their background knowledge of the topic through a paired brainstorming activity or a class discussion.

Following the reading of the text, the students could be asked to employ their writing skills by paraphrasing, summarizing or evaluating the reading in a written format.

ACTIVITY 1	Exploring Your Beliefs: Reflect on how you feel about each of the statements below and find out whether your classmates agree or disagree with the statements. Choose three issues and discuss them with at least three students in the class. Make sure to provide a rationale for your answers.		
STATEMENT	I AGREE because...	I DISAGREE because...	I AGREE WITH RESERVATIONS because...
1. People have learned languages for centuries, so the methods we use do not really matter.			
2. The most important thing is to let students experiment with the language (spoken and written). They learn the language by using it and need to be given many opportunities to do so.			
3. Students learn best when they are first presented with a clear explanation of grammar rules. Then, they can apply the rules and use them freely.			
4. Class time should mostly be spent focusing on language structures. Meaning can be added later on, once students can express themselves.			
5. Accuracy develops naturally. We should not worry too much about students producing perfect structures right away. It is best for teachers not to overcorrect.			
6. Language is best learned interactively, in a social environment. In an ideal class, students work together a lot.			
7. Student motivation does not matter. They will learn regardless of their motivation.			

Source: Hedwige Meyer, University of Washington.

Nunan (1989) believes skills integration to be an important feature of language learning, which appeals to interaction, task continuity, real world focus, language and learning focus and task outcomes. In other words, when several of the language skills are incorporated into a lesson or activity, the task become more holistic and reflective of real-world language use.

ADVANTAGES OF THE INTEGRATED SKILLS APPROACH

Communication, by definition, requires the integration of the main language skills; in integrated- skill instruction, learners are exposed to authentic language and are involved in activities that are meaningful and interesting (Shen, 2003 qtd. in Akram and Malik, 2010). In order to facilitate meaningful activities which highlight real language in use, educators emphasize the importance of implementing content-based and task-oriented instruction. By using the integrated skills approach in a language classroom, learners experience the language in a natural and authentic way, benefitting from a true perspective of the rich intricacies of language as it is applied in genuine communication. In addition, by integrating the language skills, learners progress not only in their acquisition of the various skills but also in increased knowledge of subject-specific content, as opposed to just focusing on discrete language forms. When a language instructor teaches a language by introducing meaningful and engaging class activities incorporating the various skills, it enhances the focus on realistic communication, which also leads to intrinsically motivating and encouraging the students to want to learn the language and be more involved in classroom activities.

LIMITATIONS OF THE INTEGRATED SKILLS APPROACH

A potential limitation of the integrated skills approach might be that some learners will have disproportionately developed proficiencies across the four primary language skills. For example, second language learners who live in English- speaking countries may have stronger skills in listening and speaking and social discourse than in reading and writing in academic settings. On the other hand, English as a foreign language learners are likely to be better readers and writers than listeners and speakers since typically their primary learning of these skills occurs within the classroom. For this reason, the teaching of integrated skills can become somewhat complicated, when instructional materials and practice have to account for a considerable variance in learners' abilities. In addition, since the primary focus of integrated instruction emphasizes purposeful communication and discourse competence, the teaching of grammar as well as accuracy in learner language production may receive less emphasis than it should (Richards, 2005 qtd. in Hinkel, 2009).

OVERCOMING THE LIMITATIONS

With the current emphasis on both fluency and accuracy in language production, integrated language teaching and learning, as well as integrative instructional models, will need to continue to be refined and developed (Swain, 1991 qtd. in Kaplan, 2010). Lessons which provide explicit instruction in both language forms as well as how to accurately use those in the context of communicative tasks would enable the students to have more command of the target language. All things considered, after decades of research in language teaching and learning, it becomes evident that in many cases and for many purposes, the separation of the four primary language skills is likely to be less effective than integrated instruction simply because, in reality, communication does not take place in terms of discrete

linguistic skills (Hinkel, 2009). Even if it were possible to develop one or two skills effectively in the absence of the other language skills at the beginning stages, this does not ensure adequate preparation for real international communication, in which not only language skills but also communicative skills are employed simultaneously (Akram and Malik, 2010). When a language teacher approaches a language by introducing authentic and thought-provoking class activities encompassing the four skills, it enhances the focus on realistic communication, motivating the students to learn the language and be more enthusiastically involved in classroom activities.

TYPES OF INTEGRATED SKILLS INSTRUCTION

Integrated language instruction that engages learners in meaningful communication and enables them to attain their learning objectives can be found in a practically unlimited array of models, teaching materials and techniques.

ACTIVITY 2	Think of the language skills that might be used in the following situations. Put a check mark in the appropriate columns. Then add four more situations and put a check mark under the skills that might be involved.			
SITUATION:	LANGUAGE SKILL: Reading	Writing	Listening	Speaking
1. Holding a map and asking someone for directions				
2. Applying for a bank account				
3. Inviting a friend to an event				
4. Conducting a questionnaire/survey				
5. Your example:				
6. Your example:				
7. Your example:				
8. Your example:				

Content Based Instruction (CBI)

Content-based instruction (CBI) involves the studying of some specific subject-matter content in combination with the learning of a second or foreign language. The target language is the medium which is used in order to convey informational content of interest and

relevance to the learner. CBI enables students to acquire both practical knowledge as well as language skills, which becomes more relevant to students' long-term goals, which in turn fosters their intrinsic motivation. For example, in a history, science, or literature course, the students would be learning subject-specific material pertaining to the course as well as engaging in language skills objectives such as developing their reading strategies and their vocabulary, and their grammatical and writing skills through the context of the content itself. There are many topics that can be considered 'content'; what is important is that what is being taught or discussed through the content leads to opportunities for language development as well, promoting student engagement and intrinsic motivation.

Theme Based Instruction

Theme-based or topic-based instruction is considered a more specific form of content-based instruction, as it places an equal value on both content and language objectives. Language skills are enhanced through attention to both topic and language. The rationale is that language is used to explore a particular theme, and language growth emerges as students need to comprehend or produce language related to that theme. In theme-based instruction, many different activities are linked together by their theme, so the topic is frequently addressed through everything that happens in the classroom, and it acts as a connecting thread for the students.

An example course for pre-university students might focus on topics of current interests/themes such as public health, multiculturalism or any societal trends. English for specific purposes (ESP) is an example of theme-based instruction, as it caters to specific learners' needs on a particular topic such as Business English, Legal English, or Medical English, and the students focus on learning content and terminology pertaining to that topic while also developing their linguistic skills.

ACTIVITY 3	Imagine you are teaching the past verb tense to your students. Brainstorm and write down 5 content subjects, topics, or themes that are related to your target language that you could use to practice this grammar concept (i.e., Teaching about a historical event).
ACTIVITY 4	Pretend that in your classroom, the new theme you are focusing on is "Social Media." Create an outline of a lesson on this theme that integrates the students' use of at least 3 language skills.

Task Based Instruction

Task-based instruction involves the centrality of the task itself in a language course. This implies that meaning is primary, communication must be employed for the purpose of

engaging in the task, there is some relationship to comparable real-world activities, and task completion typically has priority. Task based instruction focuses on a variety of real-world tasks and the functional purposes for which language needs to be used. Course goals tend to center on learners' pragmatic language functions. For example, in a task-based lesson or activity, students might be asked to conduct an interview, collaborate on possible solutions to an issue in their community, or simply participate in creating a class presentation. The following criteria (Willis and Willis, 2007) should be included in order for an activity to be considered a meaningful task:

- The activity or task should engage learners' interests
- The primary focus should be on meaning
- There should be a goal or an outcome and effectiveness of the task should be judged in terms of the outcome
- The activity should relate to real-world activities

An example task-based activity you could use with your students is having them think of a city where there is too much pollution. In pairs, students should list three alternative solutions to this problem. With their partner, they should compare the advantages and disadvantages of each alternative. Then the students should discuss and decide which alternative would be the most cost effective, the most innovative, and the most environmentally friendly. Finally, the students should report their decisions to another pair and have a whole class discussion on which solution would be the best one to write a letter about to the mayor of the city.

Experiential Learning

In experiential learning, one learns best by "doing," in which inductive learning activates strategies which enable students to monitor their own learning progress and gradually become more independent learners. Experiential learning places an emphasis on the psychomotor aspect of language learning, and through action, students utilize multiple skills. For example, the language experience approach (LEA), is a relatively popular type of experiential learning approach in elementary school teaching. The language experience approach is a whole language approach that promotes reading and writing through the use of personal experiences and oral language. Beginning literacy learners relate their experiences to the teacher who transcribes them and writes them on the board for the students to visualize.

These transcriptions are then used as the basis for other reading and writing as well as listening and speaking activities. Krashen and Terrell 1983 (qtd. in Taylor, 1992) recommend two criteria for determining whether reading materials are appropriate for ESL learners: First of all, the reading must be at a comprehensible level of complexity and additionally, it should be interesting to the reader. Reading texts originating from learners' experiences meet these two criteria because the degree of complexity is determined by the learner's own language, and the texts relate to the learner's personal interests.

ACTIVITY 5	Based on the above example, how might the activities integrate the four criteria listed by Willis? What types of language forms might the students need to be using during the task?
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ACTIVITY 6	Reflect on the four types of integrated skills instruction. Based on the grade, subject, and proficiency level of the students you are currently teaching or plan to teach, which of these types of integrated skills approaches would you implement for your classroom? Provide a brief example of how this type would be used for a lesson or activity.
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PRACTICAL TIPS FOR INTEGRATING THE LANGUAGE SKILLS

In order to effectively integrate the language skills in ESL/EFL instruction, teachers should consider these suggestions:

- Learn more about the various ways to integrate language skills in the classroom (e.g., content-based, task-based, or a combination).
- Reflect on their current pedagogical approach and evaluate the extent to which the skills currently are or could become integrated.
- Develop and use exercises and activities involving active student participation, interaction and collaboration.
- Choose instructional materials, textbooks, technology, and activities that promote the integration of listening, reading, speaking, and writing, as well as the associated skills of syntax, vocabulary, and pronunciation, for example.
- Even if a given course is labeled according to just one skill, remember that it is feasible and more beneficial to integrate the other language skills through appropriate tasks.
- Explicitly teach language-learning strategies and emphasize that a particular strategy can often enhance performance in multiple skills.

In addition to the aforementioned suggestions for teachers, students should have abundant opportunities to be exposed to the language in as many authentic mediums as possible. For example, students could listen to the new academic language of the lesson as the teacher uses visuals, manipulatives, realia, and other means to physically convey the meaning of the academic language. Since it is important to vary instruction and adapt it to multiple learning styles, students should also be able to see and read, for instance in posted graphic organizers or categories the new academic language. Furthermore, genuine learning is reinforced when students are provided with opportunities to practice and apply their newly acquired linguistic content; therefore, they should be encouraged to actually use the new academic language through active learning instructional activities. As another opportunity for students to reflect on their learning, teachers can facilitate tasks in which students write about what they have learned through expressive writing or answer questions using their very own words. Only

when students have been offered fully integrated listening, speaking, reading and writing instructional activities would they be able to provide sufficient evidence of learning the language of the content areas.

- Keep in mind that a language instructor needs to constantly use a combination of these two sets in order to properly enable his or her students to use language confidently and effectively. Depending on the purpose of each particular task or lesson, the instructor may concentrate more in-depthly on either the “accuracy” or the “fluency” set, but a combination from both categories can effectively be implemented into practically any lesson.

**SAMPLE INTEGRATED-SKILLS LESSON PLAN BASED ON THE NOVEL
*THE ALCHEMIST***

The following lesson has been developed based on Paolo Coelho’s novel, *The Achemist*. It includes pre-reading, while-reading, and post-reading activities, each integrating various language skills.

Pattison, 1987 (qtd. in Akram, 2010) identified two sets of teaching having opposing goals:

ACTIVITY 7	Study Pattison’s table below and design an activity that would combine at least 2 elements from both the accuracy and the fluency categories. What are some reasons for integrating components from both teaching approaches?
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Set 1	Set 2
Accuracy	Fluency
<i>Knowledge</i> about language	<i>Skill in using</i> language
<i>Academic</i> achievement	<i>Social and personal</i> development
Cognitive aims	Affective aims

- 1) *Pre-Reading*: Write-Pair-Share: Think about 1-2 proverbs from your culture, write them in your notebook, and pair with another student to discuss the implied meanings and contexts associated with your proverbs. (Use of skills: writing, listening, and speaking)

- 2) *While-Reading*: Read the excerpt below from Paolo Coelho's *The Alchemist* and highlight any words or sentences containing references to hardship or the testing of one's courage.

Infer and discuss the possible meanings of the proverb "The darkest hour of the night came just before the dawn." (use of skills: reading and speaking)

"So, what should I do now?" the boy asked.

"Continue in the direction of the Pyramids," said the alchemist. "And continue to pay heed to the omens. Your heart is still capable of showing you where the treasure is."

"Is that the one thing I still needed to know?"

"No," the alchemist answered. "What you still need to know is this: before a dream is realized, the Soul of the World tests everything that was learned along the way. It does this not because it is evil, but so that we can, in addition to realizing our dreams, master the lessons we've learned as we've moved toward that dream. That's the point at which most people give up. It's the point at which, as we say in the language of the desert, one 'dies of thirst just when the palm trees have appeared on the horizon.'

"Every search begins with beginner's luck. And every search ends with the victor's being severely tested."

The boy remembered an old proverb from his country. It said that the darkest hour of the night came just before the dawn.

- 3) *Post-Reading*: Free-write about a time when you were faced with an obstacle or difficult challenge and what measures you took to overcome it. Were you successful? What lessons did you learn? (use of skills: writing)

ACTIVITY 8	Read the following passage and design: 1) a pre-reading activity integrating the listening and speaking skills and 2) a post-reading activity integrating the writing and speaking skills.
Richard Brautigan, "The Scarlatti Tilt" "It's very hard to live in a studio apartment in San Jose with a man who's learning to play the violin." That's what she told the police when she handed them the empty revolver. (from <i>Revenge of the Lawn: Stories 1962-1970</i>)	

CONCLUSION

This chapter has provided an overview of the rationale for implementing an integrated skills approach within a language-learning classroom. It is safe to assume that most language teachers desire to promote genuine learning - the ability for students to actually use the language and to interact with a reasonable degree of fluency as well as accuracy. However, despite many teachers' efforts, learners often leave school "knowing" a lot of grammar and vocabulary but unable to speak with confidence. They can construct sentences, read texts relatively well and even pass exams, but cannot effectively manage situations which require spontaneous spoken interaction. It is important to emphasize skill integration and meaningful communication through contextualized, theme-based, whole-language approaches so that learners may use higher-level skills rather than simply focusing on discrete language structures. Integrating the language skills also promotes the learning of real content, not just the dissection of language forms. More importantly, the integrated-skill approach, whether found in content-based or task-based language instruction or another form, can be highly motivating to students of all ages and backgrounds.

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Chapter 67

USING LITERATURE TO TEACH LANGUAGE SKILLS

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. have comprehensive background information on the use and benefits of using literature in EFL/ESL settings.
2. be informed about the practical uses of literature in teaching mainly four basic language skills.
3. be familiar with the ways of assessing the appropriate use of literature in different EFL/ESL settings.

STUDY QUESTIONS

1. Discuss the possible pros and cons of using literature for language learning purposes.
2. In what ways do you think literature can serve as a tool to teach different language skills?
3. Compare and contrast the efficacy of traditional classroom materials and works of literature in terms of the means they provide in teaching a foreign/second language.

INTRODUCTION

Using literature to teach language skills has been a matter of discussion since the 1960s. However, the use of literary works to teach languages dates back to a much earlier period.

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During the 19th century the primary means of language teaching was the grammar translation method. The practitioners of this method would view and exploit literary texts as rich sources of translation. During this period works of literature were regarded as efficient pedagogical materials (Prodromou, 2000). Through the translation of literary texts in their mother tongue, the students were made to practise such language skills as grammar and vocabulary (Liaw, 2001). However, the onset of direct and audio-lingual methods during 1960s and 1970s brought about a radical change of opinion as to the use of literature as a language teaching tool. These methods that seemed to rise upon structural approaches put heavy emphasis on form thereby dismissing the role of literature in teaching a foreign language. From this point onwards purely linguistic concerns overshadowed the use of literary works for language teaching purposes. Even the emergence of CLT in the late 1970s and early 1980s could not prevent the exclusion of literature from the language teaching curricula. According to Maley (2001), one of the main reasons of this trend against the utilization of literature as a pedagogical tool was the lack of empirical research that would manifest the potential of literature as a beneficial language teaching source. Following a long period of silence, the use of literature in the language classroom experienced a revival starting from the middle of the 1980s. Under the influence of communicative trend, literature started to be regarded as a tool to assist the development of mainly communicative competence as well as “a springboard for the development of critical thinking and aesthetic appreciation” which also contributes to the students’ awareness on the culture and society of the relevant country (Bretz, 1990, pp. 335-338). Recognizing their potential, many linguists began to view literary works in the classroom as authentic, pleasurable and cultural material (Hall, 2005, pp. 47-57). Since this reemergence of literature in the realm of language teaching, not only the use of literary works but also research, both empirical and theoretical, as to their role in language teaching has gradually gained momentum. Today, particularly the popularity of interdisciplinary studies has brought about an even greater focus on the pedagogical potential of literature particularly for language teaching purposes. Despite the difficulties of incorporating literary works in ELT curriculum, works of many scholars in the field strongly argue for the benefits that inclusion of literature would potentially bring. Many studies conducted by Lazar (1993), Cook (1994), and Shanahan (1997) draw attention to the potential that literature holds as a language teaching tool.

Despite the concerns stated by a few linguists and educators, there has been a great deal of research that speaks in favor of literature as a pedagogical tool. Bradford (1968) introduces three ways through which works of literature are likely to be conducive to success in language teaching. First of all, literature provides a rich of source of vocabulary for the language learner. The second contribution of literature according to Bradford is the exceptional sentence structures that it hosts. Getting familiar with these structures in authentic settings is an advantage for language learners. Povey (1972) holds a similar view asserting that with its rich vocabulary pool and complex syntactical patterns literature helps language learners develop the extent of their proficiency levels both in terms of language use and linguistic competence. Finally, literary works introduce new cultural perspectives and give the chance to have a language experience in real life settings. As McKay (1982) states literature can be used to enhance awareness of students as to the diverse uses of language. Another important contribution of literature to language learning is regarded as its effect on critical thinking skills of students. Oster (1989) suggests that literature provides students different perspectives, which in turn extends students’ vision and encourages critical thinking.

Lazar (1993) draws attention to a similar potential by pointing out that literature might become a language teaching tool by fostering discussion, controversy and critical thinking. Another important benefit of literature is that through exposure to language intended for native speakers, students have the chance to learn different forms and conventions (Collie and Slater, 1991, p. 4). In this respect, literary works become real and meaningful models for language learners. One of the most detailed accounts trying to justify the role of literature in language teaching comes from Maley (2001), who lays out a number of reasons to use literary works in EFL/ESL settings: 1. Universality: All cultures and languages follow a certain literary tradition, which involve common themes such as nature, death, love and separation. 2. Non-triviality: Literary texts present real and meaningful materials unlike the artificial trivialized language teaching resources. 3. Personal relevance: the events, views and emotions embedded in literature are relevant to learners' own experiences, so they can find or imagine correlations to their personal lives in works of literature. 4. Variety: Literary texts appear in a multitude of different forms and contents. This makes them enjoyable and motivating for language learners. 5. Interest: Literature deals with familiar subjects in an interesting and appealing manner. 6. Economy and suggestive power: Through literary devices, literature has the power to say much with a minimum amount of expression. 7. Ambiguity: The perceived meaning in literary texts can vary from individual to individual, which makes it an invaluable source for discussion and interaction.

In today's text books students have little opportunity to be involved in authentic use of language. The settings and activities provided by these materials are mostly artificial and remote from real communication. Literature requires students to actively participate in meaningful activities and eliminates the disadvantages of mechanical process which is unfortunately still predominant in EFL/ESL classrooms worldwide. Duff and Maley (1991) bases the need for the incorporation of literature into language teaching curriculum upon its "linguistic, methodological and motivational" potential (p. 48). Unlike the referential features of traditional text books and materials, literary texts are representational, which helps learners to use and develop their cognitive skills (McRae, 1996).

USING LITERATURE TO TEACH LANGUAGE SKILLS

Literature is a rich source hosting numerous characteristics of original language which can serve a useful purpose for the development of reading, writing, speaking and listening skills (Stern, 1991). Literary texts supply diverse linguistic input and creative stimuli that engage students in meaningful, real life settings thereby becoming an effective source of motivation. They appeal not only to receptive but also to productive skills. Today, the use of literary works in the language classroom can turn into an amazing learning experience. These texts can become even more attractive and motivating by the support of movies, music videos, audio texts and podcasts. Along with the mastery of grammatical patterns and new vocabulary items, literary texts provide opportunities for extensive practice in all four basic language skills.

Works of literature can both be used for classroom activities and for activities outside the classroom. Simplified and abridged versions of literary texts enable their use for all proficiency levels. Genres of literature that we can use as a pedagogical resource in the language classroom are novels, plays/drama, short stories, poems and songs.

GENRES OF LITERATURE USED IN TEACHING LANGUAGE SKILLS

Novels

Why Use Novels

Novels are potentially rich sources of literature that may be used for language teaching purposes. They may be beneficial either as an intensive or extensive means of study. Widdowson (1984) suggests that novels contribute to “meaning making processes and language capacity in our learners” (p. 246). From a similar perspective, Hardison and Sonchaeng (2005) notes that the texts offered by novels are more meaningful and students have the chance to be exposed to “authentic communicative events” instead of the monotonous dialogues practiced in most EFL/ESL classes (p. 594). Compared to traditional classroom texts, most of which offer mechanical means of practice within a limited and largely artificial context, novels create a learning environment that enables the practice of a wide range of creative and life-like activities. The major concern regarding the use of novels in the classroom is that they may be hard to handle in the limited course hours. However, this is a drawback that can easily be overcome by careful planning. Provided that the teacher chooses the right material and plan wisely, the benefits of using novels will far outweigh the risks. Helton, Asamani and Thomas (1998) outline the possible benefits of using novels in the classroom as follows:

Novels,

- stimulate students’ imagination,
- help students to identify the emotions of the characters so that they can learn how others cope with situations and problems similar to their own experiences,
- help them master the skills that will enable them to acquire information, process this knowledge, identify problems, formulate alternatives, and arrive at meaningful, thoughtful, effective decisions and solutions,
- develop oral and written language skills,
- serve as a springboard for a multitude of holistic learning and critical thinking activities beginning with basic comprehension and writing,
- present a unique way of teaching reading by getting students involved and excited about the reading process,
- motivate students to become a lifelong reader, since literature provides students with a wide range of language varieties like sociolects, regional dialects, jargon, idiolects, etc., it develops their sociolinguistic competence in the target language. Hence, incorporating literature into a foreign language teaching program as a powerful source for reflecting the sociolinguistic aspects of the target language gains importance (pp. 1-5).

Target Skills

Novels can help students to improve all language skills. Although their benefits are mostly associated with reading and writing skills, novels with audio scripts, graphics, movies, theatrical adaptations can offer a much wider range of activities involving speaking and

listening skills. As Povey (1979) suggests that using authentic literary texts like novels for teaching purposes helps students improve all language skills "because literature will extend linguistic knowledge by giving evidence of extensive and subtle vocabulary usage, and complex and exact syntax" (p. 162). Of all the genres used as teaching materials, novels have the most extensive potential to contribute to different aspects of the language learning process provided that the material chosen fits into the needs and proficiency levels of the learners.

Role of the Teacher

During all language learning activities based on a novel the teacher should refrain from being the sole authority in the classroom. Whatever the type of the activity is, students should be allowed to learn by active participation. During the whole process, depending on the type of activity, the teacher may act as a guide, facilitator, organizer or prompter. The teacher only acts as a controller during the presentation stage if necessary.

Activity 1

Compare and contrast the potential difficulties and benefits of using novels as language teaching materials.

Drama

Why Use Drama

Drama is one of the most enjoyable literary resources that can be used in EFL/ESL settings. As Fleming (2006) maintains drama is by nature student-centered. It calls for the active participation of all students in activities conducted in the classroom. Through activities based on a work of drama learners can have the chance to act, move, play and learn simultaneously. As Phillips (2003) notes drama has the potential to get the students involved in various aspects, "through their bodies, minds, emotions, language and social interaction" (p. 6). On the other hand, the main practice of drama is acting out, which may be difficult to organize in crowded groups. However, the teacher can deal with this difficulty by arranging group work activities. Thus, this argument cannot be solely a reason to exclude drama from the language classroom as its gains are too valuable to be overlooked. Maley (2005) summarizes the educational benefits of drama as follows:

- It integrates language skills in a natural way. Careful listening is a key feature. Spontaneous verbal expression is integral to most of the activities; and many of them require reading and writing, both as part of the input and the output.
- It integrates verbal and nonverbal aspects of communication, thus bringing together both mind and body, and restoring the balance between physical and intellectual aspects of learning.
- It draws upon both cognitive and affective domains, thus restoring the importance of feeling as well as thinking.
- By fully contextualizing the language, it brings the classroom interaction to life through an intensive focus on meaning.

- The emphasis on whole-person learning and multi-sensory inputs helps learners to capitalize on their strength and to extend their range. In doing so, it offers unequalled opportunities for catering to learner differences.
- It fosters self-awareness (and awareness of others), self-esteem and confidence; and through this, motivation is developed.
- Motivation is likewise fostered and sustained through the variety and sense of expectancy generated by the activities.
- There is a transfer of responsibility for learning from teacher to learners which is where it belongs.
- It encourages an open, exploratory style of learning where creativity and the imagination are given scope to develop. This, in turn, promotes risk-taking, which is an essential elements in effective language learning
- It has a positive effect on classroom dynamics and atmosphere, thus facilitating the formation of a bonded group, which learns together.
- It is an enjoyable experience.
- It is low-resource. For most of the time, all you need is a 'roomful of human beings' (p. 1-2).

Target Skills

Drama can provide the means to practice all four language skills. Yet, mainly it is effective in developing listening and speaking skills. Apart from its contribution to oral skills, drama can also help students discover their potential and capabilities. Through activities of this type students are likely to develop a positive attitude towards language learning.

Role of the Teacher

Because drama activities are inherently learner-centered, the teacher should avoid having the dominant role in the class during these activities. Rather, the teacher needs to act as a guide and/or facilitator. Hoetker (1969) draws attention to this point by stating that "the teacher who too often imposes his authority or who conceives of drama as a kind of inductive method for arriving at preordained correct answer will certainly vitiate the developmental values of drama and possibly its educational value as well." A strictly teacher- centered attitude may seriously hamper the progress of the students expected to take part in drama activities.

Activity 2

Do you agree with the notion that drama can be more effective in teaching productive skills rather than receptive ones? Why or why not?

Short Stories

Why Use Short Stories

Of all literary genres, short stories are generally regarded as the most effective and employable teaching resource in the classroom. Poetry is found risky because of its metaphoric nature as well as nonstandard use of language, while novels, on account of their

length, may be hard to incorporate into the language teaching syllabus. Drama is also viewed as less suitable for teaching purposes than short stories on the grounds that acting out a play or a similar activity may be difficult to perform in a large student group. In this respect, Poe describes the short story as a narrative “that can be read at one sitting of from one-half hour to two hours and is limited to a certain unique or single effect to which every detail is subordinate” (as cited in Abrams, 1981, p. 76). Compared to novels in particular, short stories have a much easier plot for students to follow. They also contain fewer characters and less complex literary devices than novels. These and some other factors make them easier to incorporate into language curricula and syllabi. From a similar point of view Collie and Slater (1991) notes the benefits of short stories as follows:

- One or two class hours are generally sufficient to introduce a short story.
- Students can study on short stories without strict supervision or assistance because of their relatively simple nature.
- There are many types of short stories available that appeal to different tastes and interests.
- Finally, short stories can be utilized at all proficiency levels, beginner to advance (p. 196).

Target Skills

Just like novels, short stories can be used as effective teaching tools for all language skills. They can be good models for writing activities and their length allows the teacher to perform intensive reading activities within course hours. Today, there are numerous short story audio books, which can be used to perform listening activities. The dialogues in short stories and their simple story line provide a rich and practical source for communicative activities. Drawing attention to their overall benefit, Murdoch (2002) states that “short stories can, if selected and exploited appropriately, provide quality text content which will greatly enhance ELT courses for learners at intermediate levels of proficiency” (p. 9). Particularly for the teacher who sets out to use literary texts in his class for the first time, short stories may be a good option to begin with.

Role of the Teacher

Using a short story for language teaching purposes is probably the easiest among the other genres of literature. The teacher’s role as controller is normally limited to clarifying few literary devices and if needed a set of new vocabulary items. During the rest of the course hours the teacher acts mainly as an organizer. The activities based on the short story are carried out under his/her guidance with minimum amount of interference. When students encounter difficulties while performing the assigned tasks or roles, the teacher may also act as a facilitator by providing positive and encouraging feedback.

Activity 3

Short stories are believed to be the most appropriate literary works to use in EFL/ESL classrooms particularly at lower proficiency levels. Discuss the reasons in groups.

Poems and Songs

Why Use Poetry

In the realm of language teaching the definition of poetry covers a broader spectrum. For teaching purposes, pop-songs, haiku, pattern poems, picture poems, nursery rhymes and folk-songs can all be regarded as poetry. Poetry is generally viewed as the most difficult genre that can be used as a language teaching tool. Brindley (1980) argues that poems often deal with geographical or social settings remote to the students' experience. However, probably, the greatest barrier to understanding poetry is its elliptical, metaphorical, and highly allusive language. Poetry, from this perspective (i.e., as a high-level, individual reading activity), has little to offer the EFL classroom, especially at middle school and high school level (Brindley, 1980, p. 1). As Brindley states poetry presents many difficulties for EFL/ESL learners due largely to its metaphoric nature and irregular use of language. In view of these reservations, poetry has not been considered “as ‘proper’ material for foreign language learning” (Maley & Duff, 1989, p. 6). However, largely as a result of the changing tendencies in language teaching such as the shift from form-based learning to meaning-oriented acquisition and from product-oriented learning towards process-oriented learning, use of poetry for teaching purposes are now supported by many scholars. Some of the benefits of using poetry and/or songs in language teaching are as follows:

- Learning to read and write poetry can be an effective tool for developing English literacy, in that, from time to time it is used to express feelings in texts such as birthday cards, love letters. Understanding the meaning in a favorite song or just being able to utter its rhyme is almost a daily activity of many teenagers nowadays, which makes understanding poetry essential for the social aspect of language learning.
- Listening and pronunciation activities based on poetry or songs are not only enjoyable but also efficient in developing listening comprehension skills.
- Exposure to the sounds of poetry and songs increases the awareness and unconscious absorption of language patterns and vocabulary. Whereas the stylistic characteristics of a poem leave a trace on readers' eyes, the sounds of language such as the rhyme and rhythm in poetry and songs penetrate into the mind and enhance the language learning process (Maley & Duff, 1989, pp. 10-11).
- Poetry allows the formation of a safe learning community where learners gain the self-confidence to act without constraints and feel free from the fear of being ridiculed. In this way, “free communication can take place” among learners (Arnold & Brown, 1999, p. 10).
- Poetry can stimulate group discussions and activities,
- Carefully-selected English poems offer a wide range of themes that appeal to the interests and likes of learners since they supply them with “meaningful and memorable contexts for processing and interpreting new language” (Lazar, 1993, p. 17).

Role of the Teacher

Since poetry as a pedagogical tool is usually used for upper-intermediate and advanced learners, the roles of the teacher are more varied and challenging. The metaphorical nature of poems and songs often requires feedback or presentation from the teacher. The discussion sessions are generally stimulated and moderated by the language teacher so that students can perform the activities more efficiently. In order to trigger interaction through use of poetry in EFL/ESL classroom, depending on the difficulty of the text and level of students, the teacher may sometimes have to act as a controller and/or facilitator. As in the implementation of activities based on other genres of literature, teacher's role as organizer is essential from the beginning to the end of the teaching process.

Activity 4

Using poetry in the language classroom might require more effort than the other genres on the part of the teacher. Make up a to-do list for the teacher who wants to use poetry in the language classroom.

METHODOLOGICAL APPROACHES TO TEACHING LITERATURE

Below you will find a fairly detailed account of existing approaches and models developed by different scholars and linguistics. Although each of them is based on a theoretical assumption and has a contribution to make to language development, only some of them are actually appropriate for language teaching purposes in general.

The Critical Literary Approach

The main focus of this approach is on literary elements in the text. The students are required to be informed about the literary devices and peculiarities. Students taught through this approach should have intermediate or above intermediate language proficiency (Maley, 1989).

The Stylistic Approach

According to Maley, the characteristic of the stylistic approach better fits the requirements in a EFL/ESL classroom because it deals with literature as a text and analysis of language is given priority (Maley, 1989).

Language-Based Model

In this model, literary texts are mainly used for language development. From this perspective it resembles Maley's stylistic approach. Although literary merits of a work should not be totally ignored, the texts are viewed and studied in terms of the linguistic elements they involve (Carter & Long, 1991).

Literature as Content or Culture Model

In this model, literary materials serve as a catalyst that would make students familiar with the cultural notions of the language like the history, literary theories, theory of genres, and biography of the authors (Carter & Long, 1991; Lazar, 1993).

Literature as Personal Growth or Enrichment

The main purpose of teaching through Personal growth model is not to develop language proficiency but to create awareness as to the association of literary experience with the students' real-life experience (Carter & Long, 1991).

The Story Grammar Approach (SGA)

Story grammar originated in the early twentieth century as a result of the analyses of folktales by anthropologists. The Story Grammar approach aims to create genre-awareness in textual analysis, which in turn is expected to enhance comprehension of the target text (Amer, 2003).

Reader Response Approach (RRA)

In this approach, learners study literature as an end itself, not for language learning purposes.

Therefore, it is similar to Maley's critical literary approach (Amer, 2003).

New Criticism

New criticism generally focuses on the analysis of long texts from Old literature. It does not address learners' real language needs (Van, 2009).

Structuralism

Structuralism involves the utilization of linguistic and structural aspects of a text (Van, 2009).

Stylistics

This approach is based on the notion that studying the linguistic features of a literary text should lead to aesthetic experience (Van, 2009).

Reader-Response

In this approach the reader's interactions with the text result in the interpretation. In other words, the interpretation is achieved through the interaction between the text and the reader (Van, 2009).

Language-Based

Language based approach involves the use of literary texts for language teaching through activities such as cloze procedures, brainstorming, summarizing, jigsaw reading, etc. (Van, 2009).

Critical Literacy

Critical Literacy approach calls for in-depth analysis of literary texts. Students are supposed to discover and comprehend the underlying meanings in a work of literature so that they can reach critical awareness (Van, 2009).

Integrated Approach

Integrated approach is one of the most effective ways that can be adopted by language teachers willing to use literary text as a tool in EFL/ESL classrooms. It provides a coherent model through which all language skills are taught by incorporating a set of text-based, student – centered activities which as Collie and Slater (1987: 8) suggest “add fresh momentum into the teaching of literature by stimulating students’ desire to read and encouraging their responses”. Savvidou (2004) suggests a plan where the integrated teaching process is explained stage by stage:

Stage 1: Preparation and Anticipation

Stage 2: Focusing

Stage 3: Preliminary Response

Stage 4: Working at it – I

Stage 5: Working at it – II

Stage 6: Interpretation and Personal Response

Within the framework offered by Savvidou any literary genre can be used as a language teaching resource as long as the material chosen appeals to the needs, proficiency levels and interests of the learners.

Activity 5

Of all the above approaches and models, which one(s) do you think is/are likely to be effective in EFL/ESL classrooms. State reasons for your choice(s).

Activities

Among the activities listed below you can choose the ones that you think will be most appropriate for your group of students. You can also create your own activities or modify an existing one according to your needs. Some of the activities listed under a certain type of skill below may be used to teach different skills at the same time. For example, note-taking can be regarded both as a listening and writing activity. You decide which activity to use at which stage of your lesson plan with regards to your methodology, course objectives, the literary text, the needs and proficiency levels of your students. As it covers all language skills, adopting the integrated approach can help the students at all levels to get the utmost benefit out of the literary text that is being used as a pedagogical tool. The most common activities used to develop language skills are as follows:

Reading

- *Skimming*: skimming is reading rapidly to get only the main idea or a general overview of the text. It is a particularly useful activity in pre-reading stage.
- *Scanning*: scanning is reading the text for specific information. The teacher asks students to find out a specific point by reading the text quickly.
- *Making inferences*: students are asked to make inferences from a specific section or part of the text. The teacher wants them to identify what lies beneath the stated meaning.
- *Predicting*: After reading a fragment of the text, students are asked to make predictions about the rest of the story. This can also be used as a speaking activity.
- *Sequencing*: Students are asked to put, for example, lines from a jumbled poem in the correct order.
- *Previewing*: previewing activities are used to build background knowledge before reading the main text. Previewing can be achieved through charts, quizzes, movies, pictures or through other means created by the teacher.

Listening

- *Listening for the main idea*: Students listen to the texts focusing on the main idea of the literary text.
- *Note-taking*: Students listen and take notes. This can be used as a writing activity as well.
- *Summarizing the passage*: Students listen to the literary text or a fragment of the literary text. Afterwards, they are asked to make a summary of what they have heard. Summarizing phase might be written or spoken. Therefore, it is not just a listening comprehension activity. It can also be used for the development of speaking and writing skills.
- *Predicting content*: Students listen to a fragment of the literary text, after which they are asked to make predictions about the topic or story presented. As they also need to

talk about their predictions, this type of activity can also be used to practice speaking skills.

- *Listening for specific information:* Students listen to the literary text or a fragment of the literary text to identify specific information the teacher asks them to find out.

Speaking

- **Role Play:** Role-play is the general term for a set of activities in which students act out the role of an imaginary person either in a supposed or real situation (Venugopal, 1986). According to Livingston (1983) through role-play activities learners get the chance to practice language aspects of role-behavior, which involves the actual roles outside the classroom. Role Play activities are effective means of exploration for the students. Through these activities they can find out what lies beneath the complex social situations presented in a literary text (Blatner, 2002). Role play activities create an environment that is not only enjoyable but also productive. Most teachers, at some point in their career, experience the disappointment of asking their pupils to discuss a particular topic and get nothing in return. Assigning roles to the students makes them a part of the story and thus they become an actor rather than a spectator. In this way, they understand what it feels like to be on the other side (Wrentschur & Altman, 2002). The types of role-play activities are as follows:
 - Dramatic plays
 - Story dramatization
 - Sociodrama
 - Seminar style presentation
 - Debates and interview

As long as the literary text chosen is carefully graded, these activities can be used at all proficiency levels. From beginner to advanced role-play activities will contribute to the overall development of language proficiency.

- **Mime:** Mime can be defined as "a non-verbal representation of an idea or story through gesture, bodily movement and expression" (Dougill, 1987, p. 13). Students simply act out a story or an idea through bodily movements, gestures and mimics without resort to oral expressions. Mime helps students develop self-confidence, creativity and imagination. Used appropriately mime can be "a source of great enjoyment" for the learners (Hayes, 1984, p. 28). Feeling that they can even express themselves without the help of spoken language acts as a catalyst to produce and encourage interaction before or after the actual mime activity. As a warm up activity you may ask your students to act out a couple of concepts relevant to the actual literary text you intend to use. This would provide an insight and facilitate the process before going through the actual text itself.
- **Simulation:** Jones (1982) describes simulation as a "reality of function in a simulated and structured environment" (p. 5). Generally role-play and simulation activities overlap, that is, it is almost impossible to draw a clear line of distinction between the two. However, this doesn't seem much of a concern for the teacher as both groups of activities are likely to contribute much to students' progress in the target language. In

simulation activities students act out either themselves or an imaginary character in a predefined setting. For example, if you are teaching through a short story, a dialogue in a specific part of the story may be simulated by assigning roles to the students. The events may be arranged identically or in a different course. Oral activities in general may be practiced in various forms of dialogues such as invitations, introductions, complaints or greetings. The approach should be in parallel to the literary text that is being used as a pedagogical tool.

- *Improvisation*: Hodgson and Richards (1974) define improvisation as "spontaneous response to the unfolding of unexpected situation" (p. 2). During improvisation activities the teacher usually acts as a guide with minimum amount of directions. Improvisation takes place spontaneously. At the initial phase these types of activities may seem difficult for the students, most of whom would probably feel anxious and reluctant. However, in time as they discover their potential and capabilities, they will get involved more enthusiastically. Before beginning improvisation the teacher informs students about the setting they are in and the characters they are supposed to portray. The rest is entirely built upon students' imagination. For example, the teacher tells the students that they are a team of adventurers getting ready for a challenging journey in their base camp. Taking this information as their point of departure the students are free to create a world of their own, even something totally different from the actual story in the target literary text. These activities may be organized in groups or as a whole class activity.
- *Discussion*: students are asked to discuss independently a relevant topic or given clues to trigger discussion on a specific aspect of the issues in the literary text.
- *Oral reading*: Making the students read texts aloud helps the development of pronunciation. It is also a motivating activity particularly at low proficiency levels.
- *Presentations*: The students are assigned to make presentations on the topics relevant to the ones mentioned in the literary text.

Writing

- *Controlled Writing*: Controlled writing activities are particularly appropriate for beginners who need to recognize and practice certain grammatical patterns in the target language. Among the specific techniques used in this type of activity we can mention the following:
 - discussions
 - debates
 - brainstorming
 - asking information questions on the target text
 - clustering
 - conference
- *Guided Writing*: Guided writing activities are most effective when used at intermediate levels. In this type of activity students are generally expected to respond to a set of input provided by the teacher or his/her peers. For example, a group of questions may be directed to the students and they may be asked to reconstruct a text

through the answers of these questions. Another option might be to provide the topic and/or the concluding statement of a paragraph and ask them to generate the supporting statements. Most common techniques in this respect are as follows:

- Using a shared approach (Shared writing is a joint writing approach in which both tutor and learners contribute to the plan, the ideas, and the language of the text they construct together. As they work with the tutor to construct a text through shared (or guided) writing, learners brainstorm ideas, plan an outline, and draft a piece of writing for a particular purpose in a specific form.)
- Acronyms (Acronyms provide reminders of different text structures.)
- Templates (Templates provide an outline or prompts for a piece of writing.)
- Writing frames (Writing frames provide a skeleton or outline of a planned text that includes prompts for learner writers.)
- Reproducing the Model: Activities based on reproduction of the literary texts that are being used in the classroom help EFL/ESL students, particularly those at high proficiency levels, to improve their writing skills to a great extent. Paraphrasing, summarizing and adaptation are among the most beneficial and popular techniques used for this type of activities.
 - Paraphrasing (Students restate the meaning of a text or passage using their own words. During the restatement process students also need to alter the structures used in the original sentence.)
 - Summarizing (A summary is a collection of the most essential points of the original information in a nutshell. Students are instructed to write a summary of a chapter or the specific part of a novel they have read or heard.)
 - Adaptation (Students are asked to rewrite prose fiction into dialogue or, reversely, rewriting a play or a scene into narrative. This activity helps students to become aware of the variations between written and spoken English (Stern, 1991, p. 333).

SAMPLE LESSON PLAN

Course material: 'Everyday Use' by Alice Walker (Short Story)

Course Objectives:

- To develop reading, writing, speaking and listening skills of students through integrated activities based on the literary text,
- To create an awareness about racial discrimination.

Age group: 15-18

Proficiency Level: Intermediate

Duration: 2-3 hours (may change depending on the pace of the students)

Social Issue for discussion: racial discrimination

Literary devices: metaphors and symbols

Suggested Strategy: Integrated Approach

Warm-up (Suggested Activities)

- Drawing Game: Start with a drawing game. Choose the items you want them to guess from the story. (Suggestions: dasher, polaroid, quilt)
- Charade: Give students flashcards and ask them to pantomime what is written on the card. Try to choose the words that will be helpful while reading the main text.

Pre-reading Stage

Previewing: Establishing the necessary background knowledge

- Students watch a short video clip about American civil war.
- Pictures about Black Pride movement are shown so that students get informed about the setting and time of the story, all of which help them to understand the overall context.
- A brief biographical information about Alice Walker is given by the teacher

Prediction: Arousing interest

- Students try to make guesses about the content of the story by looking at its title. Tell them to make predictions considering the background knowledge they have just been given during previewing activity.
- Students watch a fragment of a video clip in which racial discrimination is introduced through a short drama. Afterwards, they are asked to guess what happens next in the clip. First, they write down what they think. Then, they speak about it.

Vocabulary in Context: teaching new vocabulary items

- Some of the key vocabulary items are presented in sentences and the students guess the meaning of these words. The sentences should not be taken from the text itself. If the students fail to guess the meaning of any vocabulary item, teacher gives a definition or provides more examples, similar words or pictures to make them guess or learn the meaning. (Suggested words from the story: furtive, recompose, doctrine, heritage)

While-Reading Stage

Skimming: reading for the main idea

Students read the story quickly to identify the main idea.

Model reading: Reading for pronunciation

The teacher model reads the story paying attention to pronunciation, intonation etc.

Silent reading: Intensive reading for details

Students read the passage silently paying attention to plot and characters.

Presentation: Helping students with language, vocabulary, plot and characters.

The teacher clarifies the meaning of passive vocabulary items and some grammatical structures for recognition if any. Cultural meanings, concepts or events are also explained if necessary.

The teacher helps students to have a deeper understanding of plot, characters and main theme(s) of the story.

Post-Reading Stage

Note-taking and summarizing: integrated listening and writing practice

Students listen to the audio version of the short story and take notes.

By making use of the notes they take, students write a brief summary of the story

Role Play: integrated writing and speaking practice

Students work in pairs/groups and write short dialogues based on the key actions or events in the story.

Students act out the roles of some characters from the story in the form of dialogues they write beforehand. (For example between Dee and her mother)

Discussion: integrated listening and speaking practice as well as work on narrative point of view

Students work in groups.

Students discuss the main theme of the story (Racial Discrimination), during which they ask and answer questions. The teacher acts as the moderator during the whole discussion session.

Activity 6

Design your own lesson plan based on any of the genres presented in this chapter making use of the suggested activities and the lesson plan sample presented above.

CONCLUSION

In this chapter, we focused on the use and role of literature in the language classroom. There is surely more to discuss as to why and how we can make use of literature as a language teaching tool. However, even the limited amount of information presented here clearly indicates the fact that works of literature have so much to offer in the EFL/ESL classroom. Such a rich source can help generate a much more effective learning outcome provided that the teacher is equipped with the necessary knowledge to use it pedagogically.

Lazar (1990) suggests that teachers who would like to use literature as a teaching tool should assess both the possible drawbacks and educational benefits along with linguistic opportunities (pp. 204-205). Using literature in the classroom has its risks as well as benefits. Teachers should be aware of both and take careful steps in order not to hamper the language learning process. Whatever the genre is, the material the teacher intends to use in the classroom should be in line with learners' needs and proficiency levels. The activities must be

designed to reveal the interactive, creative and motivating potential of literary texts so that students can have a more powerful learning experience than the one promised in traditional texts.

Although it may be difficult to build a curriculum in a particular sequence that is entirely made up of literary texts, works of literature can accompany textbooks in various ways and are potentially capable of contributing to the development of all language skills. For example, using a novel as a textbook might be too radical a decision unless there is a perfect match between the literary text and course objectives. However, using a novel to support and enrich classroom practice and activities may help the teacher immensely to achieve his/her goals.

Literature will help the practice of language in a meaningful context. Literary texts help students master both receptive and productive language skills. Teachers using literature for language learning purposes should be informed about the approaches and models they can use. Of all the approaches presented in this chapter, you can use the one that best suits your needs. However, in general it is advised that using an integrated approach will render literary texts and the learning outcomes produced through them much more efficient.

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Chapter 68

USING TASKS IN LANGUAGE TEACHING

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THE GOALS OF THE CHAPTER

After reading this chapter, students will be able to:

1. Describe a task and the basic task cycles of Task-Based Learning and Teaching (TBLT).
2. Classify different types of tasks that should exist in a TBLT lesson.
3. Carry out analyses of TBLT activities.
4. Reflect about TBLT approach in relation to other approaches within the English Language Teaching (ELT) field.

STUDY QUESTIONS

1. How can we characterize a task?
2. What are the basic task cycles and classroom activities used during the in-class language learning period through task-based approach?
3. Which aspects of TBLT differ from the other approaches in ELT?

1. INTRODUCTION

Although Task-Based language learning (TBLL), also known as task-based language teaching (TBLT) or task-based instruction (TBI), is quite a popular term in ELT field, this

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methodology do not seem to have a fixed definition. However, it can be defined in general terms as Foster (1999:69) suggests:

TBLL methodologies share a common idea: giving learners tasks to transact, rather than items to learn, provides an environment which best promotes the natural language learning process.

This method has become a corner-stone of many educational institutions and ministries of education around the world (Nunan, 2004: 13). This might result from the fact that it gives an emphasis on “means” rather than “product”. It has gained popularity as it also encourages learners to be reflective learners, and welcomes a wide range of learning styles. Learning with an explicit sense of purpose is key to student motivation and involvement and, thus it is consistent with current theories of education. Another reason for TBLL to be a keystone approach might be the fact that learning occurs most effectively when related to the real-life activities performed by the learner. Focusing on the use of authentic language and asking learners to do meaningful tasks such as visiting a doctor, calling customer service for help or conducting an interview, while using L2, this method enables students to investigate the language in a non-threatening environment and teachers to achieve initiating reflective learning and teaching.

2. THE MAIN ISSUES OF TBLL

a) What Is a Task?

Both the research and pedagogic literature provide various definitions of a task. These definitions address a number of dimensions: 1. the scope of a task, 2. the perspective from which a task is viewed, 3. the authenticity of a task, 4. the linguistic skills required to perform a task, 5. the psychological processes involved in task performance, and 6. the outcome of a task. (Ellis, 2003:2).

Kumaravadivelu (1993) lists a collection of “task” definitions as follows:

... one of a set of differentiated, sequencable, problem-posing activities involving learner and teachers in some joint selection from a range of varied cognitive and communicative procedures applied to existing and new knowledge in the collective exploration and pursuance of foreseen or emergent goals within a social milieu (Candlin, 1987:10).

... a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language while their attention is principally focused on meaning rather than form. The task should also have a sense of completeness, being able to stand alone as a communicative act in its own right. ... When tasks are implemented in the classroom an observer of participants' judgment will determine the degree of completeness as much as the characteristics of the task itself (Nunan, 1993:59)

A language learning task is also about communication and its codes and conventions; its content can offer data on language and information about language. The content of language tasks can, therefore, be metacommunicative because its subject-matter is directly or indirectly about the means of communication and about the workings of language in use. A grammar exercise, a graded reading, or a written dialogue will serve to exemplify the workings of language by using messages to carry and reveal the code. Alternatively, a problem-solving task based upon a sample of target language in use may exploit the code as a means to involve the learner in interpreting and expressing meanings (Breen, 1987a:17).

... any structured language learning endeavor which has a particular objective, appropriate content, a specified working procedure, and a range of outcomes for those who undertake the task. 'Task' is therefore assumed to refer to a range of work plans which have the overall purpose of facilitating language learning - from the simple and brief exercise type to more complex and lengthy activities such as group problem-solving or simulations and decision-making (Breen, 1987b:23)

... for present purposes a task is taken to be an activity in which: i) meaning is primary; ii) there is some sort of relationship to the real world; iii) task completion has some priority and iv) the assessment of task performance is in terms of task outcome (Skehan, 1996:38)

An activity which required learners to arrive at an outcome, from given information through some process of thought, and which allowed teachers to control and regulate the process, was regarded as a "task" (Prabhu, 1987:24).

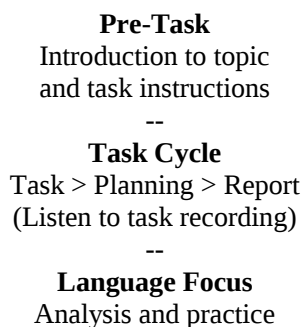
...a piece of work undertaken for oneself or others, freely or for some reward. ... In other words, by 'task' is meant the hundred and one things people *do* in everyday life, at work, at play, and in between. Tasks are the things people will tell you to do if you ask them and they are not applied linguists (Long, 1985:89).

...a piece of work or an activity, usually with a specified objective, undertaken as part of an educational course or at work (Crookes, 1986:1).

... a range of work plans which have the overall purpose of facilitating language learning - from the simple and varied exercise type to more complex and lengthy activities such as group problem-solving or simulations and decision-making (Breen, 1987:23).

b) Task Sequences

The figure below is a brief outline of a task-based class structure (Willis, 1996:52):



1. Pre-task: This serves as an introduction to the topic and task. This might involve brainstorming, a pre-task, introduction of useful words and phrases, preparation time or listening to native speakers doing the task. New structures are not pre-taught at this stage.

2. The Task Cycle: This cycle has three major stages and one further optional stage.

Task: Learners begin by fulfilling a communication task, using whatever language they already have, in pairs or groups. A task is a goal-oriented activity in which learners achieve a real outcome.

At this stage, the teacher monitors and encourages learners' attempts to communicate meaning in the target language. While helping them systematize what they want to say, the teacher does not correct errors. The emphasis is on spontaneity and fluency.

Planning: Learners prepare to report on the outcome after the completion of the task. The emphasis is on organization and accuracy later on. The teacher advises students on language and helps them correct any errors they make during this stage.

Reporting: Some or all of the groups report briefly to the whole class. The others listen in order to compare findings or to conduct a survey. The teacher may express things differently but not correct the language.

Optional post-task listening: This stage allows students to listen to native speakers do the same task and to compare the language.

3. Language Focus:

Analysis: Learners focus on form and ask questions about language features.

Practice: Teacher conducts activities based on the analysis work or examples from the text or transcript.

c) Task Types

According to Willis, (1996:26-28), there are six main types of task:

1. **Listing:** You can list people, places, things, actions, reasons, everyday problems, things to do in various circumstances. Examples: a) In pairs, agree on a list of four or five people who were famous in the 20th century and give at least one reason for including each person; can you remember your partner's busiest day? b) On your own, make a list of all the things he/she did. Then check with your partner. Were there any things you forgot?
2. **Ordering and sorting:** This can be sequencing, ranking or classifying. Examples: a) In pairs, look at your list of famous people. Which people are most likely to remain popular and become 20th century icons? Rank them from most popular to least popular, and be prepared to justify your order to another pair. b) Look at the four pictures. They are mixed up. Work in pairs. Put the four pictures in a sequence so that they tell a story. Prepare to tell your story to another pair.
3. **Comparing:** Comparison tasks can be based on two quite similar texts or pictures or places or events that learners have experience of. Learners can also compare their

own work with that of another learner or another pair or group. Examples: a) Compare your list of possible 20th century icons with your partner's list. Did you have any people in common? Tell each other why you chose them. How many reasons did you both think of? Finally, combine your two lists, but keep it to five people. b) Tell your picture story to another pair and listen to theirs. Compare stories – make a list of the main similarities and differences.

4. Problem solving: Text-books often contain activities based on common problems: pollution, relationships, noisy neighbours and so on. The instructions for the town center traffic problem in the example below incorporate six or seven ways of generating richer interaction:
5. -Think of a town center where there is too much traffic. In pairs, think of three alternative solutions to this problem. List the advantages and disadvantages of each alternative. Then decide which alternative would be the cheapest one, the most innovative one, the most environmentally friendly one. Report your decisions to another pair/group/the class, and discuss with them which solution would be the best one to put forward to the local government.
6. Sharing personal experiences: Activities where learners are asked to recount their personal experiences and tell stories are valuable because they give learners a chance to speak for longer and in a more sustained way. Besides it is something we often do in real-life. However, in order to encourage richer interaction, we usually need to add a clear goal, make instructions more precise and give clear completion points.
7. Creative tasks: Projects and creative tasks contain doing and reporting a survey, producing a class newspaper, planning a radio show, designing a brochure.

d) Other Task Types

Information gap, jigsaw and dictogloss activities are other task types of TBLT.

Information Gap Activities

Each student has information that the other student(s) don't have. The objective is for students to ask questions to find out what they can from the other(s).

Example

A's Information:

Person's Name	From	Occupation	Weekends	Movies
1. Jill (female)		doctor		romance
2.		professor	go fishing	
3. Jared (male)	Cincinnati			action
4.	Cleveland	banker	play cards	
5. Janet (female)	Dayton			

B's Information:

Person's Name	From	Occupation	Weekends	Movies
1.	Toledo		relax at home	
2. Jason (male)	Columbus			horror
3.		mechanic	play baseball	
4. Jenny (female)				drama
5.		lawyer	read novels	comedy

Sample Questions

What is the first person's name? How do you spell it? Where is he/she from? What is his/her occupation? What does he/she do on weekends? What kind of movies does he/she like?

After completing the chart, discuss with your partner:

Which person would you like as a friend? Why?

Dictogloss Activities

Dictogloss is a form of dictation, in which the students hear and reconstruct the whole text rather than doing so line by line. Dictogloss is useful in that learning becomes an active involvement and that it stimulates motivation, which can be used as a pre-reading activity, to present grammar and vocabulary, to name a few examples.

Steps:

1. Create a short text (4 to 5 sentences), that has the language item you will focus on, for instance “comparatives”, “would for past habits”, “personality adjectives”, etc.
2. Prepare students with a warm-up. Introduce the topic and pre-teach some vocabulary if needed.
3. After chatting about it for a few minutes, read the story twice at normal speed. The first time, they should not write anything but just listen. Remember to pause between sentences. Read it out the second time and ask students to note down the key ideas.
4. Have students reconstruct the story. Underline that the aim is not to write the story word for word, but to write the key ideas.
5. Students, then work in groups, compare their notes and try to reconstruct the text on OHT strips (you could have students write on the board if technology is not available).
6. Chose a volunteer group to display the story and ask other groups to give feedback, make necessary changes.
7. Finally, project the original text and ask students to identify any differences between the two texts.

8. Depending on the text and language, proceed accordingly. If it is for pre-reading purposes, ask them what they think the text could be about. If your aim is to present a language item, ask students to discover the rule, etc.
9. As a follow-up activity, students may write a similar text.

An example text:

“When I was a child we used to go camping every summer. We’d choose a different place each year, and we’d drive around until we found a beach we liked. Then, we’d pitch our tent, as near as possible to the beach. We’d usually spend most of the time on the beach or exploring the country round about. We never went to the same beach twice.”

Jigsaw Activities

In a jigsaw task, students work in pairs or small groups. They each have different information and they have to exchange their information so that they each have all the information. Often they then have to answer questions or do other tasks based on the complete information.

Example

A pair of students are each given a partially completed chart giving different information about three people – Tane, Pita and Moana. The information might be about where they come from, how many other people live in their house, how many pets they have, what their favourite sports are, and what music they like best. The students take turns to ask and answer questions regarding the three people without looking at their partner's chart. Both partners must request and supply missing information in order to complete all the details about Tane, Pita & Moana.

Open and Closed Tasks

Open and Closed tasks are minor types of tasks. Closed tasks are highly structured with specific goals and relatively predictable language forms. Open tasks are less structured with less specific goals and less predictable language forms. An example of a closed task would be the well-known information gap activity, in which, for example, two students determine whether they have the same picture. Students may not look at their partner's picture but must ask whether it includes a specific element. They take turns asking and answering questions. This task requires them to use the nonreferential *there* structure in questions and answers (e.g., Is there a chair in your picture? No, there isn't. Yes, there is.). It is communicative in the sense that the participants must use English to accomplish something, and it promotes an awareness of the form of nonreferential *there* sentences. A closed task is also collaborative, since two students work together to achieve successful communication.

The aim of the task based learning framework is to create the optimum conditions for language learning. Willis (1998:3) identifies these four essential conditions as:

- Exposure to the target language
- Opportunities to use the target language for expressing meaning
- Motivation to engage with exposure and use what they know
- Focus on language form to prevent fossilization

Here is a checklist that can help you work out if task based learning is achieved or not:

1. Does the activity engage learners' interest?
2. Is there a primary focus on meaning?
3. Is there an outcome?
4. Is success judged in terms of outcome?
5. Is completion a priority?
6. Does the classroom activity relate to real world activities?

3. SAMPLE ACTIVITIES

STRICT PARENTS

This lesson is taken from the book, *Doing task-based teaching* (Willis&Willis: 2007), but it is described in more detail here. The lesson is built around a discussion. The question for discussion is:

Whose parents were the strictest?

3.1. Introduction

You might lead into the discussion by telling students about your own childhood. Look at the student questionnaire below to give you some ideas as to what to include in this introduction.

3.2. Student Questionnaires

Here is a possible questionnaire to guide the student discussion. It is intended for discussion in groups of three or four. You may want to leave out some of the items. For example *c)* may be inappropriate in some settings. You may want to include other items, for example *Did you have to look after brothers and sisters?*

The questionnaire and the discussion were designed for an adult class who were asked to look back on their childhood. If you are teaching a high school class you may want to ask them questions relevant to their earlier childhood. Instead of *b)* for example, you might ask *What time did you have to go to bed?* Instead of *c)* you might ask *Did they let you stay overnight with friends?*

When you were a child:

- a) *Do you think your parents were strict or easy-going?*
- b) *Did they allow you to stay out late at night?*
- c) *Did they let you go on holiday on your own?*
- d) *When you went out did you always have to tell them where you were going?*
- e) *Did you always have to do your homework before supper?*
- f) *Did your parents make you help about the house?*
- g) *Did you have to help in the garden?*
- h) *What jobs did they make you do?*

You can vary the demands you place upon the class. With an advanced class you could begin by going straight into the questionnaire without further introduction. With a weaker class or an intermediate class you might begin with a teacher led discussion of each question. Here are some options you might consider going from least to most teacher support:

1. Go straight into the questionnaire without any further introduction.
2. Show students the questionnaire, give them two minutes or so to read through it, then ask them if they understand everything.
3. Show students the questionnaire then read through it with them explaining any possible difficulties.
4. As 3. As you read each question tell them briefly about your own experience.
5. As 4. At each stage after relating your own experience ask a student to tell you what they think.
6. As 5. Finish by adding a summary of what has been said.

If you go for option 1 this means that students will have to rely almost entirely on their own resources, although the fact that they will be working in groups will mean that they can help one another. If you go for a lower option, number 5, for example, this will give you an opportunity to help with the kind of vocabulary they might need.

You might want to make a list of new words down one side of the board.

You should not worry about grammar at this stage. Students will find their own ways of expressing the meanings they want. You may quickly rephrase some of the things they say to make them more comprehensible, but do not spend time correcting grammar and do not spend time at this stage on grammatical explanation or practice. That will come later (see 5 below)

3.3. Discussion

Put students into groups of about four and ask them to decide whose parents were the strictest. Tell them they can use the ideas in the questionnaire, but they may want to add to them. As they are involved in the discussion go round the groups listening to what they have to say. It is better not to correct students at this stage, but if they are having problems expressing themselves you might want to help out.

During the discussion you should appoint one student for each group as spokesperson. Their job is to report the findings of the group to the class as a whole after the discussion.

You may want to allocate other roles as well. One possibility is to make one student the group secretary. Their job is to take notes to summarise the discussion for other group members.

3.4. Post-Discussion

After the discussion give the groups a few minutes to brief their spokesperson before that person reports back to the class. Choose one or two of the groups and ask them to report. Ask the other groups to listen carefully and compare with the strictest parents from their own group.

After the discussion you may want to summarise what the groups have told you and to ask the other groups for their comments.

3.5. Language Focus

- a. Give students a copy of the questionnaire. Ask them to underline all the expressions about what people were forced to do and what they were allowed to do.
- b. Tell them to turn over their copy of the questionnaire so that they cannot see it. Show the following on OHT or PowerPoint, or give it to them as a handout:

When you were a child:

1. *Do you think your parents were ----- or ---- - -----?*
2. *Did they ----- -- stay out late at night?*
3. *Did they --- -- go on holiday on your own?*
4. *When you went out did --- always --- -- tell them where you were going?*
5. *Did you always ----- -- do your homework before supper?*
6. *Did your parents ----- -- help about the house?*
7. *Did you ----- -- help in the garden?*
8. *What jobs did they ----- -- do?*

- c. Ask them to work in pairs to fill in the blanks.
- d. Tell students to put their worksheets away. Put numbers 1-8 on the board. Ask students to work in pairs to see how many of the 8 sentences they can recall. You may want to make this recall exercise easier. You can do this by leaving a few key words in:

1. *Do you ----- parents ----- or ---- - -----?*
Etc.

Or you can give them a version of each sentence with all the grammatical words and markers removed:

2. *they/you/stay/late/night*

3. *they/you/go/holiday/own*

Etc.

You can ask them to pause after five minutes and listen, without writing, while you read the sentences out to them. They can then go back to work.

Students usually enjoy the challenge of this kind of exercise.

3.6. Controlled Practice

You may want to round off the lesson with some controlled practice. This will help to fix the forms in learners' minds, making it more likely that they will become a natural part of their productive repertoire. Here are two possible exercises practising *make* and *do*, and the verbs *force*, *allow* and *suppose* in the passive, which is how they are very frequently used:

Complete these to make true sentences:

1. When I was a child my parents ***made me***
2. They ***let me***
3. I was ***forced to***
4. I was ***allowed to***
5. I was ***supposed to***

Think about your schooldays...

1. List three things ***you had to do or were forced to do***.
2. List three things ***you weren't allowed to do***.
3. List three things ***you were supposed to do but didn't***.

As students read out their sentences you may want to incorporate listen and repeat drills.

After students have composed their sentences you can ask one or two of them to read out one of their sentences, then, after four or five ask the rest of the class to see how many sentences they can recall. You can make this easier for them by writing clues up on the board:

Miguel: Wear uniform

Juan: Homework

Maria: High heels

Students will then recall:

Miguel had to wear a uniform.

Juan was supposed to do his homework every night.

Maria wasn't allowed to wear high heels.

3.7. Follow-Up

You should try to follow up in a subsequent lesson within a week. With a general class you could remind them of the discussion and ask them to recall their conclusions in a teacher

led discussion. With an exam class you might follow this with a gap filling exercise or give a few multiple choice items which feature these grammatical items and reproduce the format of their exam.

Another possibility would be to have a skills lesson focusing on the same topic. Here are extracts from two interviews recorded by Tim Marchand, which you could use as the basis of a listening skills lesson:

- A. My Dad is a quiet man really, so he didn't really make me do much at home. He sometimes asked me to wash his car or cut the grass, but I was never forced to do it, and I could usually get some pocket money for it as well. I think my Mum was also pretty easy-going; she let me stay out late with my friends. As long as she knew where I was, she wouldn't mind so much what I did.
- B. My father was definitely stricter than my Mum. If I had been in trouble at school, it was always left up to him to tell me off. But I wouldn't say that my Mum was easy-going exactly. She would sit me down sometimes and make me do my homework in front of her, or force me to eat my greens, things like that. I guess I was just more scared of my father.

4. A SAMPLE LESSON PLAN

Robbery in a Sweet Shop

Tell learners that this lesson is based on a true story which was reported in *The Guardian* newspaper a few years ago. The first stage (steps 1 to 3) involves encouraging learners to speculate on the story on the basis of a few clues. At the next stage (steps 4 and 5) they make up their own stories to fit the clues. At step 4 learners should ideally work in pairs or groups, but if they are not used to this they could work first as individuals, perhaps making up their story for homework, and then get together in groups to share ideas.

At steps 6-9 they compare stories. At the end of this they should be keen to and/or hear read the newspaper story (step 10) to find out what really happened.

1. Write up on the board:

The Characters:

- A shopkeeper
- Her two children
- A young man
- An eight-year-old boy
- The police

The Setting:

- A corner shop in Ashton-under-Lyme, Manchester.

The Props (things used in the story):

- A balaclava
- A packet of Smarties
- A plastic bag
- A gun

Some phrases from the story:

A young man came in to buy a newspaper

He pointed a gun at her and told her to fill up the bag

I pretended to reach for some money

They are taking the case very seriously, like all cases which involve a firearm, fake or not

2. Explain some of the words and phrases which might cause difficulties. A *balaclava* is like a ski mask. It covers someone's face so only their eyes can be seen. *Smarties* are small brightly coloured sweets with chocolate covered in a thin layer of sugar. A *fake* is something which is imitation, which is not real.

3. Ask learners what they think happened in the story, but do not tell them if their guesses are right or wrong.

4. Ask them to try to guess what happened in the story. Tell them to use as many of the ideas on the board as they can. The best thing is for them to work in pairs or groups and discuss their ideas. This will give them a lot of speaking practice.

5. Tell them you are going to ask some of them to tell their stories to the class. Give them some time to prepare their stories. Go round and listen as they work.

6. When they have had enough time to prepare their stories appoint a spokesperson for each group. Ask the groups to work with the spokesperson to prepare the final version of their story.

7. Ask one of them to tell the story. Try to choose someone who thinks the young man is the robber.

8. Ask the others if their stories are the same or different. Choose someone who has a different story and ask them to tell it. Try to choose someone who thinks the eight-year-old is the robber.

9. Engage the class in a discussion as to whose story is the most likely.

10. Hand out the story for them to read. Or, if you want them to have some listening practice you can read the story out before they read it.

Eight-year-old tries to rob sweet shop.

Manchester police are looking for an eight-year-old boy who attempted to hold up a sweet shop last night in the suburb of Ashton-under-Lyme.

The boy, who was wearing a balaclava, went into the corner shop and bought a packet of Smarties for 25p. As the shopkeeper gave him his change a young man came in to buy a newspaper. The boy waited until the man had gone then threw a plastic bag at the shopkeeper. At the same time he pointed a gun at her and told her to fill up the bag.

“I’m not sure whether he wanted me to fill it with sweets or with money,” said the shopkeeper, who did not want to give her name. “I didn’t know if the gun was real or not, but it certainly looked more real than the guns my little boy plays with. I was quite frightened because I had my children with me. I pretended to reach for some money, but I pressed the alarm instead. When it went off he turned and ran out of the shop.”

She described the boy as 1.2 meters tall, and dressed in jeans and a dark coat. The police are asking the public to help. They say they are taking the case very seriously, like all cases which involve a firearm, fake or not.

4.1. Language Work

4.1.1. Identification

Ask learners to underline all the phrases with *to*:

tries to rob sweet shop; attempted to hold up a sweet shop; to buy a newspaper; told her to fill up the bag; whether he wanted me to fill the bag with sweets or with money; who did not want to give her name; I pretended to reach for some money; asking the public to help.

4.1.2. Analysis. Ask Them to Look at These Patterns

PATTERN A

VERB	<i>to</i>	VERB
tries	<i>to</i>	rob
attempted	<i>to</i>	hold up
(not) want	<i>to</i>	give
pretended	<i>to</i>	reach for

PATTERN B

VERB	NOUN	<i>to</i>	VERB
told	her	<i>to</i>	fill up
wanted	me	<i>to</i>	fill
asking	the public	<i>to</i>	help

Look at these sentences. Are they pattern A or pattern B?

- I need to borrow some money.
- We need someone to help us.
- The boy ordered her to fill up the bag.
- We always had to get up early.
- Can you help me to carry these boxes?

4.1.3. Help Your Learners to Organise Their Knowledge of Verbs Followed by to

These are the commonest verbs with pattern A:

agree, appear, attempt, begin choose, continue, decide, expect, forget, happen, hate, help, hope, intend, love, live, learn, mean, plan, prefer, pretend, promise, refuse, remember, seem start, try, want, would like.

How many of these verbs are to do with speaking?

How many are to do with thinking?

Can you find other words in the box which mean the same as: *appear, attempt, begin, intend, like, want*?

These are the commonest verbs with pattern B:

advise, allow, enable, expect, help, intend, invite, mean, order, prefer, tell, want warn (usually warn someone not to), wish, would like.

Can you find eight words that are also used with pattern A?

How many words are to do with speaking?

How many words are to do with wanting or liking?

4.1.4. Practice

Lead class discussions based on this:

Choose **either**:

- Three things you *want/would like* to do over the next year.
- OR
- Three things you *hope/intend/plan to do* over the next year.

Write down the three things in your book. Close your book. See How many things you can remember.

You can listen to a few sentences before learners close their books, then make sure they all have their books closed and lead a class discussion about what people want to do and about what they hope to do. These sentences will generally be pattern A.

Lead more class discussions based on this:

Choose **either**

- Three things your teacher *doesn't allow you to do* in class.
- OR
- Three things you *would like someone to give you*

Write down the three things in your book. Close your book. See how many things you can remember.

Again you can listen to a few sentences before learners close their books, then make sure they all have their books closed and lead a class discussion about what people want to do and about what they hope to do. All these sentences will be pattern A.

4.1.5. Round-Up

Ask learners to read the story for homework and be ready to tell the story next lesson. It is useful to build up a repertoire of stories so that in future lessons you can ask learners *who can remember the story about ...* and ask them to tell one of the stories that they have studied. This is a good way of getting them to remember the useful language they have encountered.

4.1.6. Vanishing Words

- a) Take a sentence from the text. For example:

As the shopkeeper gave him his change a young man came in to buy a newspaper.

- b) Write the full sentence on the whiteboard¹.
c) Ask one or two learners to read it out.
d) Rub out two or three words:

___ the shopkeeper ___ him his change a young man came in ___ buy a _____.

- e) Ask learners to work in groups of three or four. Tell them to work as a group to recall the sentence. Ask a learner to recall the sentence. Ask the class if the recall is correct. If they are not satisfied, they can go on guessing until they are content.

- f) Remove more words:

___ the shopkeeper ___ ___ his _____ a _____ man _____ in ___ buy a _____.

- g) Repeat e).
h) Go on until you have removed all the words.

You can make this activity more difficult:

1. By choosing a more complex sentence:

Manchester police are looking for an eight-year-old boy who attempted to hold up a sweet shop last night in the suburb of Ashton-under-Lyme.

2. By removing several words at each stage:

Manchester _____ are _____ for an eight-year-old boy _____ to hold up a _____ shop last night in the _____ of Ashton-under-Lyme.

¹ You can use Power point very effectively for this activity if you have the facilities.

3. By asking learners to work in pairs or individually instead of groups of three or four.

CONCLUSION

Having examined the task-based instruction method briefly, including some definitions, types, sequences and implementation of tasks, the subject of this chapter, it is appropriate at this stage to review the study questions and to consider how TBLL differs from the other approaches in ELT.

Task-based language learning method contradicts with the teacher-controlled and linear approaches, and do not support transferring information, but developing skills and strategies. It seems to offer an understanding of a complete body of language learning. For this reason, learning can be seen as a shared action, in which a great deal of negotiation between the teacher and learners can easily be observed. It can be deduced that TBLL offers action whereas other approaches are relatively low in action. As a learner-centered method, TBLL draws on the learner's knowledge, and therefore course materials are selected on the basis of both their needs and interests.

Still and all, when considering TBLL it is significant to work out the context in which it is to be used, and also the feedback of the learners. Such questions like "Are the learners familiar with the methodology?", "If not, are they willing to accept a methodology that is alien to them?" will probably be useful. Accordingly, negotiation with learners, so as to make sure that they are pleased to learn through this method, can motivate the learners to become involved in the process and the approach. It is therefore vital for teachers to take into account their teaching environments and apply this new approach sensitively.

As Vygotsky (1986:99) states, "the English teacher can provide the appropriate learning experience for the appropriate student at the appropriate time, by promoting awareness (and acquisition) of learning strategies, by encouraging learners to investigate the language through meaningful interaction in a non-threatening environment, and by initiating reflective self-evaluation".

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- An excellent introductory article on TBL* by Richard Frost: <http://www.teachingenglish.org.uk/think/articles/a-task-based-approach>.
- Four articles on TBL* by Jane Willis can be found at: <http://www.teachingenglish.org.uk/think/articles/criteria-identifying-tasks-tbl>.
- Free sample task-based lesson plans* at <http://www.willis-elt.co.uk/taskbased.html>.

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Chapter 69

COGNITIVE LINGUISTICS IN THE YEAR 2010

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ABSTRACT

Cognitive linguistics emerged as a movement in the mid-1980s. Although in some sense it represents a new direction for linguistics, cognitive linguistics also builds upon venerable traditions, re-connecting the discipline with its past rather than severing ties and striking off in a revolutionary direction. Originally inspired by work by psychologists on the structure of human categorization in the 1970s, cognitive linguistics has maintained its commitment to psychological and neurological plausibility. Cognitive linguistics views linguistic cognition as indistinguishable from general cognition and thus seeks explanation of linguistic phenomena in terms of general cognitive strategies, such as metaphor, metonymy, and blending. Grammar and lexicon are viewed as parts of a single continuum and thus expected to be subject to the same cognitive strategies. Significant developments within cognitive linguistics in the past two decades include construction grammar and the application of quantitative methods to analyses.

Keywords: history of cognitive linguistics, radial category, prototype, metaphor, metonymy, blending, construction grammar, quantitative analysis

PREAMBLE

Ten years ago I was asked to write a position piece on cognitive linguistics for Slavists. It was the year 2000, and, like scholars all across the disciplinary spectrum, Slavic linguists felt the urge to revisit past achievements and assess future challenges. The major intellectual issue of the day was negotiating the available linguistic theories, and preventing adherents of opposing camps from backing so far away from each other that communication was cut off. My job was to write an article that would open a door to cognitive linguistics for my colleagues.

The original article had two strokes against it: it was targeted to the narrow audience of linguists working on Russian and closely related languages, and it was never published in print form. But despite these facts, this article became the most widely read and quoted piece in my list of publications, serving as the introductory article in university courses on cognitive linguistics. In its present form, this article has been refocused to address not just Slavists, but all linguists, and indeed all people interested in how languages work. I thank IJCL for the opportunity to revisit this article and to publish it in a print volume.

In addition to addressing a wider audience, the present article describes significant developments that have taken place in our field in the course of the past decade, integrating them into the discussion of cognitive linguistics in general. These developments include the blossoming of construction grammar and increased focus on empirical methods. In addition, there has recently been more attention paid to cognitive linguistics by scholars working in related fields such as psychology, typology, and robotics.

Although this article is intended as an introduction to the field, it is also a personal story. I was tremendously lucky to get involved with cognitive linguistics before any of us really knew what it was or what would become of it. In 1982, at the prompting of a visiting Bulgarian lecturer, I wandered into a presentation on metaphor by George Lakoff at the UCLA business school (in those days his ideas were not welcome in a linguistics department). By the end of the talk, I knew that I would use Lakoff's model to analyze the Russian prefixes I was struggling with. This chance event led me to write one of the first dissertations in cognitive linguistics. But you will not find the term "cognitive linguistics" anywhere in my dissertation, since it had not yet been coined. The only existing literature at that point were Rosch's (1973a-b, 1978; Mervis and Rosch 1981) works in psychology, plus some linguistic studies inspired by Rosch (Fillmore 1975, 1978, 1982; Kay and McDaniel 1978; Coleman and Kay 1981; Lakoff 1977). Lakoff and Johnson's (1980) *Metaphors We Live By* was a novelty then, and Ronald Langacker generously gave me a draft of his *Foundations of Cognitive Grammar*, which was published in two volumes five and eight years later. I very literally had the good fortune of being in the right place at the right time, and of meeting the right people who helped me out at a critical moment in my career. This account is entirely autobiographical, one person's view of how our field has evolved and where it is now.

1. INTRODUCTION

A curious thing happened to me in the 1990s. For several years, I had been teaching a course in cognitive linguistics at the University of North Carolina. A graduate student from the linguistics department who had taken my course in cognitive linguistics six years earlier came and knocked on my door. The son of a famous German linguist, with all the benefits of both European and American educations, this young man was unusually erudite and a pleasure in class because of the comparisons he could draw among linguistic traditions. Still, it was evident that he had been politely sitting through the course in order to chalk up a required elective; he clearly felt no affinity toward the subject matter.

Suddenly he reappeared, tremendously animated, speaking so fast I could barely follow him. His dissertation, an analysis of resultative constructions, had run into a series of dead-

ends, eventually exhausting all the syntactic theories available, and, despite himself, everywhere he looked he was seeing semantic prototypes and their effects. Then came the confession:

“I never really thought I would take cognitive linguistics seriously.”
I could only smile and reply, “Welcome back.”

Fortunately I had just returned from a biennial meeting of the International Cognitive Linguistics Association with a treasure trove of handouts and email addresses, so I was able to bring him up to date on the latest relevant achievements and put him in contact with key scholars.

A few days later he came back to thank me; his dissertation was now off and rolling again. In the intervening years, this former graduate student, Hans C. Boas, has completed his dissertation, achieved tenure as Associate Professor of Germanic Linguistics at the University of Texas, and become a leading scholar in construction grammar.

With some variations, this is a scenario I’ve been a party to several times before. My own dissertation was a problem in search of a framework almost two decades ago, when quite by accident I stumbled upon an embryonic movement without even a name or a bibliography. Yet the concepts were so compelling and the model so useful, that I have never escaped their attraction, and gave up trying long ago.

1.1. Some History

It wasn’t an easy birth. Initially viewed as a “soft and fuzzy” California intruder, cognitive linguistics was not warmly embraced by mainstream American linguistics. During the early years, abstracts using the framework were routinely rejected from LSA programs, grant proposals were sidelined, our book series was shunned by Oxford U Press, and even as recently as the 1990s, cognitive linguists were still being denied tenure on the grounds that their work was “too controversial” or “could not be considered linguistics at all”. Yet what began in the early eighties as a wedding of intuitive data analyses (Brugman 1988, Casad 1982, Lindner 1981) with powerful linguistic concepts (Lakoff and Johnson 1980, Langacker 1987 and 1991a), by 1989 had grown into an international organization (<http://www.cognitivelinguistics.org/>) with its own journal and book series. Today the International Cognitive Linguistics Association has nearly 450 members, and over 500 registered for our most recent biennial international conference. Over a dozen affiliate organizations have sprung up, representing North America and nations across Europe and Asia, and most of these organizations also boast their own conference and publication series.

2. RELATIONS TO OTHER DISCIPLINES

The original impetus for cognitive linguistics came from the pioneering research of psychologist Rosch (1973a, 1973b, 1978) on the nature of human categorization. Throughout its history, cognitive linguistics has maintained a lively dialog with allied disciplines such as

psychology, anthropology, neurobiology, motor control, artificial intelligence, philosophy, and literary criticism. ICLA meetings regularly include plenary lectures delivered by scholars from these other disciplines to foster cross-fertilization. These events invariably expose the many ways in which the conclusions of cognitive linguistics corroborate results obtained in a wide spectrum of academic inquiries. Cognitive linguistics is most certainly not an exotic endeavor off on its own disconnected tangent, but rather a framework that interacts responsibly with a community of academic allies.

Although this does not mean that cognitive linguistics can make any claim to psychological reality (diagrams are just artifacts, we do not presume that anyone actually thinks by means of such items), it does mean that cognitive linguistics strives in an informed way to create analyses that are at least psychologically (biologically, neurologically, etc.) plausible. Ultimately our responsibility as linguists to reflect what is known about human cognition by other disciplines is more important than any formal apparatus, however elegant, that might distract us from this goal.

The relationship between cognitive linguistics and psychology remains vital; a landmark in the dialog between cognitive linguists and psychologists is the 2003 volume edited by Gentner and Goldwin-Meadow, and Gibbs (1994) has provided a steadfast connection between our two disciplines.

Some of the most current evidence of how cognitive linguistics and psychology connect to each other can be seen in the works of Boroditsky (2001, 2003) and Casasanto (2008, 2009; Casasanto and Boroditsky 2008). Typology and language acquisition have been steady companion disciplines, due to shared appreciation of variation in language, as opposed to a quest for universals; Bowerman, Croft, Haspelmath, Levinson, and Tomasello (Bowerman and Choi 2003; Bowerman and Levinson 2001; Croft 1999, 2003; Haspelmath 1997a-b; Levinson and Meira 2003; Majid et al. 2004; Tomasello 1992, 2003) have all provided valuable cross-linguistic perspectives that support the framework of cognitive linguistics.

A recent reminder of the importance of typology to cognitive linguistics is Evans and Levinson 2009. In the past few years scholars in robotics have developed an interest in language evolution and have discarded modular, rule-based models for dynamic models of category acquisition (see Steels 2010 and more discussion in 4.4 below).

As we make our way along the path of cognitive linguistics, we have always been in good company, and the number of fellow-travelers seems to be waxing rather than waning.

3. RELATIONS TO OTHER THEORIES AND THE HISTORY OF LINGUISTICS

I've argued elsewhere (Janda 1993b, Janda 1999b; cf. also Geeraerts 1987) that cognitive linguistics gives us an opportunity to reconnect the threads of the history of linguistics and heal the gashes that marked our field in the twentieth century. This does not mean that cognitive linguistics is some sort of theoretical "throwback", a reinvention of tired old wheels already rejected. On the contrary, thanks to its continuance of time-honored intellectual pursuits (the form-meaning relationship, the coherence of linguistic and non-linguistic cognition, the assertion that language is the most immediate artifact of human thought, etc.), cognitive linguistics invites us to draw on the wealth of accumulated achievements in the

history of linguistics and move forward on this path, rather than bushwhacking off in some other direction. In many parts of the world, the path of cognitive linguistics is compatible with local theoretical frameworks. For example, during the Cold War era Eastern European linguists in general and Russian linguists in particular were largely isolated from theoretical discussions in the West, and turned their energies inward, developing their own home-grown traditions. The indigenous Russian Meaning<->Text framework and other semantic theories that emerged under these conditions are remarkably parallel to cognitive linguistics (cf. the assertion to this effect in Raxilina 1998), and as a result, cognitive linguistics is quite popular in Russia as well as in other Eastern European countries, particularly Poland, the Czech Republic, and Macedonia. Our colleagues in Western Europe have likewise been quick to embrace this framework, and cognitive linguistics is well-represented in the publications of linguists working in England, Norway, Sweden, Germany, and Austria. Representation in Japan has been strong throughout the 20-year existence of the International Cognitive Linguistics Association, and the past decade has witnessed the blossoming of our field in Korea and China as well. Consequently cognitive linguistics serves as an intellectual meeting place for linguists from various continents, facilitating discourse and collaboration.

4. BASIC CONCEPTS

Cognitive linguistics did not arise fully-formed from a single source, it has no central “guru” and no crystallized formalism. It is a concatenation of concepts proposed, tested, and tempered by a variety of researchers. The people whose work has been most influential in the creation of this framework include Brugman, Casad, Croft, Dąbrowska, Fauconnier, Goldberg, Johnson, Lakoff, Langacker, Lindner, Sweetser, Talmy, Taylor, Tomasello, Tuggy, and Turner; some of their classic works are cited in the references. This framework is anything but static. As it grows, cognitive linguistics continues to present us with fresh ideas and new means for interacting with other disciplines. A significant innovation in the mid 1990s was the study of blends (see 4.6 below). The late 1990s saw the advent of construction grammar (see 4.7 below). Since approximately 2000 empirical methods have emerged as core tools for analysis in the field (see 5.1 below), and recently robotic language evolution models based on radial categories and construction grammar have appeared (see 4.4 below).

The fact that cognitive linguistics can point to no definitive text or single authority does not mean that it is a trackless wilderness of shifting sands. There is a set of core concepts and goals, most of which are shared by most cognitive linguists, as well as by the philosophers, psychologists, and other scholars who have collaborated on the development of this framework. These concepts are not the product of an imposed theory, but have instead emerged from empirical observation corroborated across languages and disciplines. Rather than being a random hodgepodge, these concepts mutually support one another and have coalesced into a theory firmly grounded in fact. Overall, cognitive linguistics tends to lean more strongly toward data than toward theory, and it tends to expect that the latter can be gradually elaborated from the former. Early analyses of intricate arrays of natural language data performed by Brugman (1988), Casad (1982), and Lindner (1981) were formative in the development of cognitive linguistics, and the best research in this framework continues to use observations of data to tweak and refine the theory.

The above-cited ICLA website states that “[The cognitive linguistic] perspective subsumes a number of concerns and broadly compatible theoretical approaches that share a common basis: the idea that language is an integral part of cognition which reflects the interaction of cultural, psychological, communicative, and functional considerations, and which can only be understood in the context of a realistic view of conceptualization and mental processing.” In 4.1-4.7 I outline the most enduring and widely held concepts of cognitive linguistics. These concepts (and many more) are elaborated in more detail in Geeraerts and Cuyckens 2007 and a series of textbooks and collected volumes devoted to cognitive linguistics (Achard and Kemmer 2004, Croft and Cruse 2004, Dąbrowska 2004, de Stadler and Eyrich 1999, Dirven and Verspoor 1998, Langacker 2008, Rudzka-Ostyn 1988, Taylor 2002, Ungerer and Schmid 1996).

4.1. The Status of Linguistic Cognition

For a cognitive linguist, linguistic cognition simply is cognition; it is an inextricable phenomenon of overall human cognition. Linguistic cognition has no special or separate status apart from any other cognition. This means that we expect patterns of cognition observed by psychologists and neurobiologists to be reflected in language. Furthermore, the various phenomena of language are not cognitively distinct one from another. Although it is often useful and convenient for linguists to talk about various “levels” or “modules” of language, these distinctions are perceived by cognitive linguists to be artificial. The truth is that all the “parts” of language are in constant communication, and indeed are really not “parts” at all; they are a unified phenomenon operating in unison with the greater phenomena of general consciousness and cognition. Linguists have frequently observed that the borders between traditional linguistic phenomena can be crossed. Phonology, for example, can be affected by morphology, semantics, syntax, and pragmatics; and syntax has likewise been shown to be vulnerable to the workings of phonology, semantics, and pragmatics. The fact that these items are not pristinely discrete is perhaps not news, but for a cognitive linguist this type of evidence is expected, pursued, and focused on rather than being relegated to the status of something marginal and unimportant.

4.2. The Status of Meaning

All the various phenomena of language are interwoven with each other as well as with all of cognition because they are all motivated by the same force: the drive to make sense of our world. Making sense of what we experience entails not just understanding, but an ability to express that understanding, and indeed these two projects inform each other: our experience is formative to expression (see 4.4 below), but it is also the case that our expressive resources have some influence on how we perceive our experiences. Of course language does most of the heavy lifting (and the finer handiwork) in this job of expression that is so important to cognition. All phenomena of language are mobilized for this task, and all are therefore driven by the need to express meaning. Meaning underwrites the existence of all linguistic units and phenomena, none of which are semantically empty. Meaning is therefore not tidily contained

in the lexicon, but ranges all through the linguistic spectrum, because meaning is the very energy that propels the motor of language. Grammar is an abstract meaning structure that interacts with the more concrete meanings of lexicon. Grammar and lexicon are not two discrete types of meaning, but rather the extreme ends of a spectrum of meaning containing transitional or hybrid types (functor words like prepositions and conjunctions are examples of hybrids that carry both lexical and grammatical semantic freight). From the supra- and segmental features of phonology through morphology, syntax, and discourse pragmatics, all of language shares the task of expressing meaning. This includes even idioms and “dead metaphors”, which remain motivated within the system of a given language, and whose motivation can be made explicit¹

4.3. The Status of Prediction

Linguistics is a field with an almost desperate desire to be an exact science. Science and precision have unparalleled status in our society, for they command respect and authority. The operational definition of a scientific result hinges upon proving that the result can be repeated; i.e., it is predictable. The reality for linguistics is however very different from that of the physical sciences. Historical linguistics and dialectology provide plenty of evidence that even when you are starting from more or less the same place (or even exactly the same place) linguistically, you can end up with an amazing variety of results.² We have to face the fact that linguistics is really a field in which none of the experiments have adequate controls, there are way too many variables, and all the data is contaminated. It doesn't make much sense for us to depend entirely on the metaphor LINGUISTICS IS AN EXACT SCIENCE to structure our inquiry. As Croft (1999) has pointed out, if linguistic phenomena were truly predictable, there wouldn't be any variation, and variation is one of the best- documented phenomena we know.

By accepting these facts, cognitive linguistics neither disintegrates into a morass of arbitrary chaos, nor does it give up all aspirations to scientific inquiry.³ Cognitive linguistics does not subscribe to a strictly dualistic understanding of the concepts predictable vs. arbitrary or objective science vs. subjective interpretation. Just because a phenomenon is not entirely predictable doesn't mean that it is entirely arbitrary, and one should expect a dynamic relationship between data and interpretation. Cognitive linguistics searches for the motivations that drive linguistic phenomena, recognizing that sometimes several variants are

¹The case can be made that no metaphor is entirely dead; some are in a frozen state, but can be thawed out when desired, often in the context of humor. A regular feature in my courses on metaphor and cognitive linguistics is a homework assignment asking students to implement parts of a conventional metaphor that are usually not active to produce jokes such as “His ideas are so far out that even the Hubble telescope can't detect them”, or “I'm at the end of my rope! Could you hand me something longer, like maybe a bungee cord?” This task shows that even the metaphors underlying idiomatic expressions are not really “dead” – they can be reactivated and pressed into creative service.

²A historical linguist once pointed out to me that it is just as common to see a change in which A goes to B, as to see one in which A “just goes all to hell”. I can cite many examples from the history of the Slavic languages that corroborate this statement (e.g., *türt/trüt* reflexes and *jer* loss/vocalization), and surely linguists who work with other languages know of similar stories.

³Even the “hard” sciences are not immune to liberal application of “soft” interpretation. As often happens with folk theories such as LINGUISTICS IS AN EXACT SCIENCE, we apply a stripped-down version of the model, ignoring the subtler intricacies. We forget that the traditions of how to interpret data are often just as valid and venerable as the data themselves.

equally motivated, and the choice of which one succeeds is a language-specific convention that cannot be fully predicted. Though the motivations vary (and often a given phenomenon may be multiply motivated in the system of a given language), at an abstract level, these motivations yield a consistent pattern: all linguistic phenomena are meaningful; linguistic categories are radial categories with prototype effects; meaning is grounded in embodied experience and elaborated via metaphor, metonymy, and blends; construal determines how perceived reality is sorted into foregrounded and backgrounded information; etc.

Exploration of this pattern of motivations takes the place of a quest for “universals” in cognitive linguistics. Because cognitive linguistics is not in the business of prediction, it is also not looking for a set of concrete universals that would facilitate prediction (on the assumption that this is neither desirable nor realistically achievable). In the big picture, cognitive linguistics’ ultimate goal is to understand how human cognition motivates the phenomena of language, to be described in terms of abstract trends rather than air-tight, absolute rules. One could say cognitive linguistics recognizes that human beings are not rule-guided algorithms, but individuals with a free will which they exercise in ways not entirely consistent and predictable, but on the whole well-motivated and according to certain patterns.

4.4. The Embodiment of Meaning

Given the central role of meaning in language, it is essential that we understand what it is and where it comes from. One could easily spend an entire lifetime studying philosophical debates on the nature of meaning. I’ve taken a wade in this pool myself and quickly discovered that if I stayed in, I would soon be in so deep that I wouldn’t be able to do anything else, so instead of trying to swim alone, I have relied on a variety of philosophers and texts.⁴ Some of the details and the philosophical implications of cognitive linguistics are hotly contested within the movement itself.⁵ However, the vast majority of research that can be conducted in the cognitive linguistic framework requires only the principles I will describe in this subsection; the debatable details are of almost no consequence for the kind of work most of us do. I will therefore restrict my remarks to the assumptions that most cognitive linguists agree on.

⁴For example, the concepts presented in Innis 1994, who is working entirely from the perspective of the philosophy of meaning, are remarkably familiar to cognitive linguists, and indicate a strong potential affinity between the two lines of inquiry (cf. Janda 1999b.)

⁵There are some ideas associated with cognitive linguistics that one does not have to swallow in order to work within this framework. For example, Lakoff (1987) asserts that because all human experience is mediated through perception, humans have no unmediated transcendent experience of absolute reality, and therefore there is no absolute reality. In other words, cognitive linguistics can be taken as a proof that God does not exist. I would argue that our lack of access to absolute reality does not disprove the existence of this reality. Lakoff and Johnson (1999) take this argument even further, and come close to asserting that there is no real world out there. Again, I (and many other cognitive linguists) think that just because there are filters of perception and conception between us and the real world does not mean that the latter is absent, but I lack the philosophical sophistication (as well as the time and inclination) to attempt a refutation. Both Lakoff (1996) and Johnson (1992) have likewise used the premises of cognitive linguistics to support a certain moral perspective, but when Lakoff first presented his case at the 1995 ICLA meeting, there was strong opposition voiced by the audience, and Johnson’s article sparked considerable debate, chronicled in rebuttals published by McLure (1993), Gorayska (1993) and Sinha (1993). The point is that none of these theological or moral assertions necessarily follow from the premises of cognitive linguistics, and it is not necessary to agree with them in order to be a productive contributor to this field.

Meaning has to come from somewhere. It can't just exist by fiat as a set of symbols. It isn't just there in the words (or morphemes or whatever).⁶ And for the most part, meaning in natural languages cannot be manipulated by pushing symbols through the rigors of a set of logical rules. Very little of language can be fruitfully explained in this way. One cannot magically breathe the life of meaning into theoretical algorithms. The philosopher Hilary Putnam (1981) has gone to great pains to show that "brains in a vat" (i.e., a disembodied thinking system), though they might be able to pass symbols around, would not have access to meaning, and also that the assumption that meaning could exist in such a system leads to an essential logical error (cf. Lakoff 1987: 229-259). Cognitive linguistics works from the premise that meaning is embodied. This means that meaning is grounded in the shared human experience of bodily existence. Human bodies give us an experiential basis for understanding a wealth of concepts (often called "image schemas" in cognitive linguistics), such as IN vs. OUT, UP vs. DOWN, NEAR vs. FAR, COUNT vs. MASS, FIGURE vs. GROUND, BALANCE, and SOURCE-PATH-GOAL. One of the first experiences babies rehearse is that of the body as a container (IN/OUT), by putting things in their mouths. UP/DOWN is dictated by gravity and the erect adult posture, itself an achievement of BALANCE. NEAR/FAR, COUNT/MASS, and FIGURE/GROUND all derive from the way our senses work (primarily sight and hearing, though to a lesser extent touch, taste, and smell all participate in these distinctions), and SOURCE-PATH-GOAL results from our experience of ourselves and other objects moving through space. This is only a small sampling of the meanings directly attributable to bodily existence.⁷ Cognitive linguistics is an exploration of the fabric of meaning, woven thread by thread from bodily experience and embroidered by metaphor and metonymy. This is an ambitious and intricate project that still has a long future ahead of it.

It is necessary to remember that all experience is filtered by perception, and that as a consequence language is not a description of the real world (nor any possible world), but rather a description of human perception of reality. Therefore, when we examine meaning, our goal is not to find a correspondence between utterances and a world (real or otherwise), but rather to explore the ways in which meaning is motivated by human perceptual and conceptual capacities.⁸ A salient characteristic of these capacities is that they aren't constantly processing everything that comes their way; human beings are usually ignoring the vast majority of perceptual information available at any given instant. This ability to attend to certain inputs while ignoring the rest is essential to successful cognitive functioning, and can be manipulated at various levels of consciousness.⁹ The tension between what is perceptually and cognitively foregrounded and what is backgrounded can be resolved in a variety of ways, and can even be resolved differently by the same person at different moments. In cognitive linguistics we call this phenomenon *construal*, and it has significant linguistic consequences. For example, the same event of objective reality may be differently construed by different

⁶Cf. Reddy's (1979) article about how this common fallacy has been conventionalized in the metaphorical system of English and why it is indeed a fallacy.

⁷Johnson (1987) presents these and several other basic image schemas, and also discusses ways in which they are metaphorically extended to other domains in cognition, language, and art. Johnson's list of image schemas is very abbreviated; a complete catalogue would be enormous.

⁸The interplay of perception and conception has inspired Talmy (1996) to coin "ception" as an umbrella term.

⁹Churchland (1996) provides numerous examples of how human attention is focused and manipulated. At the neuronal level, it appears that vision, for example, tends to focus on moving objects. At the level of conscious manipulation, there are ambiguous drawings (the beauty/hag and rabbit/duck are the most familiar examples) that people can construe in different ways. This type of *construal* is probably more common and more significant in the manipulation of linguistic categories than it is in perception.

speakers or even by the same speaker in different utterances, thus resulting in differences in linguistic expression such as aspect, syntax, case, etc. Recognition of this fact is another reason why cognitive linguists do not aspire to prediction, yet construal enables us to examine a much broader spectrum of language use than would be possible if we assumed a direct correspondence between the input of exterior reality and linguistic output. Accepting the fact that there are both a body and a mind between those two endpoints makes the formula more complicated, but it also makes our endeavor more accurate (and note that formalism and prediction do not necessarily correlate with this type of accuracy).

Here's an anecdote to illustrate why the embodiment of meaning is important to linguists. A psycholinguist once called to tell me about some strange patterns he was finding in data on the grammatical status of numerals in various languages (I think he called me because Slavic languages provide rich evidence of this phenomenon). The numerals 'one' and 'two' tended to be treated differently, 'two' was sometimes treated differently from 'three', but sometimes they were treated the same, and often 'four' followed a similar pattern. However, 'five' tended to behave very differently from both 'four' and 'six', and 'six', 'seven', 'eight', 'nine', etc. tended to behave similarly again, usually aligned with 'five'. My colleague was puzzled by the fact that this distribution is so consistent among unrelated languages. My answer went something like this: you've found that 'five', 'one', and a lesser extent 'two' tend to have a special status in languages. To understand 'five', hold your hand up in front of your face. To understand 'two', notice your other hand, and the similar pairing of legs, eyes, ears, etc. 'One' is your experience as a unique human being, and your experience of single as opposed to plural things. The motives are all there in the body, though different languages may conventionalize and grammaticalize these facts in various ways.

The premise that meaning results from human bodily experience as processed by perception and cognition has many ramifications that cannot be explored in detail in this article. For example, there is a huge gulf between human and artificial intelligence. Why is that gulf there and is it bridgeable? The Turing ([1950]1996) Test was conceived as an operational definition of the goal of artificial intelligence – the creation of a computer that could think. The Turing Test involves a computer and a person engaged in conversation overheard by a human judge to whom the identities of the interlocutors are not revealed. According to Turing, if the human judge is unable to tell which interlocutor was the computer and which the live person, then the computer has passed the Turing Test, and the computer is indeed thinking, not just performing calculations. Searle ([1990]1996) protested that simulations such as the Turing Test are not adequate proof of conscious cognition, and presented an analogy to the Turing Test, the Chinese Room, in an attempt to defeat Turing's proposal. The Chinese Room contains a person who does not know anything about Chinese and a rule book that the person uses to match incomprehensible Chinese inputs with equally incomprehensible Chinese outputs. A Chinese speaker who provides the inputs and reads the outputs is satisfied that s/he is having a conversation with a Chinese speaker, but does this mean that the Chinese Room understands Chinese? Searle insisted that the Chinese Room does not understand Chinese, but rather than laying the Turing Test to rest, Searle's analogy sparked further debate over what it means to understand language, and some scholars insisted that his Chinese Room does indeed understand Chinese. Cognitive linguistics sided with Searle: his Chinese Room does not understand Chinese, and passing the Turing Test does not prove that a computer can think. It was thus assumed that the gulf between human and artificial intelligence is unbridgeable.

How might computers access meaning? Computers don't have bodies. Worse yet, they don't share our perceptual organs or our cognitive abilities (especially the drive to manipulate construal and to organize information in radial categories based on experience). Consequently, computers don't have access to meaning, the engine that drives both thought and language. Unless we can find a way to give them this access, computers will never be able to think or truly use language (rather than just aping cognitive and linguistic tricks via massive calculations). Barring such a breakthrough, machine translation of human utterances is similarly doomed to failure. But what if the problem is approached not by means of brute-force computation, but by means of providing computers with an embodied experience and a human-like way to process it? Churchland and Churchland ([1990]1996) presented a counterpoint to Searle, suggesting that advancements in artificial intelligence and neurobiology make it possible to envision a thinking computer. More recently, Steels (2010) and his collaborators have set up systems of robotic "agents" that have bodies and perceptual "organs", and play "language games" in which they negotiate linguistic categories for concepts such as color and location. Unlike the computers of Turing's and Searle's era, these robots do not function according to pre-set rule-based programs, but rather build categories of meaning based on their embodied experiences and communications among themselves. Their categories are dynamic and compatible with radial categories of human cognition. These robotic communities are beginning to use metaphor to understand time in terms of space, and their syntax is inspired by construction grammar. In other words, once the problem of artificial intelligence was re-stated in a way that took seriously the role of embodiment in meaning and the structure of meaning in human consciousness, progress became possible again.

4.5. The Structure of Cognitive Categories

If linguistic categories are cognitive categories, then we should expect them to have the same structure. Empirical research in psychology, neurobiology, and linguistics indicates that human knowledge is stored, accessed, and manipulated in categories with a specific structure. Set theory and Venn diagrams have trained us to expect that a category is defined by a boundary, that category membership is all-or-nothing (usually based on the criteria of necessary and sufficient features), and that all members of a category share equal status within the category.¹⁰ None of these parameters are valid for the vast majority of human categories. Rather than having a defining boundary and no internal structure, human categories tend to have a defining internal structure and no boundary. A given category is motivated by and organized around a prototypical member, to which all other members ultimately bear some relationship. Bearing a relationship to the prototype does not necessarily entail sharing a feature with the prototype, since a relationship to the prototype may be mediated by a chain of linked members, in which each contiguous pair shares features, but there may be no feature shared by category members at the extreme ends of this chain. Indeed, it is often impossible to arrive at the set of members of a cognitive category by using

¹⁰The notion of "fuzzy sets" attenuates the absolute values of these characteristics, but does not change the nature of the set structure. One should note that set theory is itself a metaphorical projection of the IN/OUT image schema. This fact makes the theory accessible and compelling, and very useful for many mathematical applications, but it is inadequate to the task of describing human categorization.

features to define it.¹¹ Complex categories can have numerous chains radiating from the prototype, and are therefore referred to as “radial categories”. The prototype has privileged status in a category, the densest structure of relationships to other members, and peripheral members are less representative of a category than the prototype (cf. Lewandowska-Tomaszczyk 2007). The relationship of the center/prototype to the periphery cannot be described in terms of a core + rules model, because the entire category, complete with its structure, is something that exists rather than being continuously generated from the center. The contents and structure of radial categories vary from language to language, and to some extent even from speaker to speaker. Radial categories are conventional and often language-specific, not a predictable result of the application of rules, and categories can both grow and shrink. The prototype is often also of higher frequency than other members of a category, however frequency is not a cause, but rather a symptom of prototypicality, and not an entirely reliable one at that.

An illustration will demonstrate some of these points. The English word *mother*¹² has as its prototype a woman who is married to the father of a child whom she conceives, gives birth to, and nurtures. However, of course there are lots of mothers: stepmothers, adoptive mothers, birth mothers, surrogate mothers, foster mothers, genetic mothers (egg donors), etc. None of the features of the prototype is necessary or sufficient to define all these people as mothers, since there is no one feature that they all share (a birth mother usually does only the conceiving, gestating and birth, but none of the nurturing, whereas the opposite is true of an adoptive mother; a stepmother is not required to perform biological or nurturing functions -- she need only be married to the father). And the category of mother is a dynamic one, showing growth at the periphery in response to fertility technologies and new legal and ethical precedents. The category represented by English *chair* demonstrates that such categories are often language-specific. Both Czech and Russian use an entirely different lexeme for what we call armchair (Cz *křeslo*, R *kreslo*) than for what we call chair (Cz *židle*, R *stul*); for Czechs and Russians, an armchair is not in the chair category, it's a different object altogether. Furthermore, Czechs are capable of viewing a wheelchair as either a type of armchair or as an entirely different type of object. In the literary language, a wheelchair is *křeslo na kolečkách*, literally an ‘armchair on wheels’; but in the spoken language a wheelchair is usually called *vozejk*, a ‘small cart’. Thus even in different registers of a single language the conventional categorization of an object can vary. The value of the radial category to linguistics is by no means limited to the semantics of lexemes such as *mother*. Successful analyses demonstrating the validity of this model have been applied to many phenomena, among them the allo-/eme relationship (phonemes and morphemes are central to categories with allophones and allomorphs being relatively more or less central or peripheral), the semantics of grammatical morphemes (such as conjunctions, prepositions, prefixes,

¹¹I have been searching for a counterexample to this for years, by asking students (and offering them credit toward their grades) to find a definition via features that will accurately capture all and only the members of a category represented by a monomorphemic lexeme of their choice, yet no one has ever succeeded in this challenge. Every featural description either excludes members that need to be included, or includes members that should be excluded, and most descriptions do both. Thus “four legs, a seat, and a back” as a definition of “chair” excludes wheelchairs and beanbag chairs, but includes many stools, couches, and benches, whereas “made to be sat upon” excludes toy chairs and logs that might be referred to as chairs when they come in handy at a campsite, but again includes other pieces of furniture for sitting. Even if a counterexample is found, it is clear that the vast majority of human categories (linguistically represented as morphemes) do not yield to a featural analysis.

¹²This example of mother is borrowed and adapted from Lakoff 1987.

suffixes, and desinences), and the syntax of grammatical constructions (where some constructions are prototypical, and others are variants of these prototypes). Indeed, the radial category provides powerful explanations for all kinds of linguistic relationships involving polysemy, for it allows the linguist to explore both the variety and the coherence of related items (rather than attending exclusively to either the variety by making atomistic lists, or to the coherence by assigning abstract features that fail to capture the variety). The linguist can see both the trees and the forest, since even the messiest array of related items can usually be viewed as a unified (though internally complex) category. As I have argued elsewhere (Janda 1996b), the radial category also establishes the asymmetric relationships (between center and periphery) that motivate the phenomena that linguists of all stripes attribute to markedness. Markedness thus emerges as a by-product of the way in which human knowledge is organized. I have likewise argued at length (Janda 1993a, 1993c, 1996a, 1998) that linguistic change flows according to the structure of radial categories (with pruning and growth expected at the periphery; analogical leveling is therefore the pruning of a peripheral category member in favor of the prototype). The prototype of any category is an item with special salience. This special salience is not something that can be mathematically defined (e.g., as the one feature shared by most members of the category). Instead this special salience is attributable to how human beings interact with members of the category, which is exactly what we should expect given that meaning is grounded in human bodily experience. The source of meaning for the word *chair* is a kinesthetic image schema of how a human being typically interacts with a chair. In other words, the act of sitting in a prototypical chair is the experience that defines what a chair is, and variations on that experience result in variations among the peripheral members of the category. Human interaction generally proves to be much more significant than features that might be available in an “objective” description of a category. For example, even though dictionaries and English speakers consistently identify falsity of information as the defining feature of *lie*, when presented with potential examples of lies (some containing true and some containing false information), speakers of English consistently rate incidents involving intention to deceive (even when all the information is true) as better examples of lies than incidents merely containing false information.¹³ In other words, it is the human interaction with lies, the experience of being deceived, that is most salient in the prototype for this category. One might easily claim that the objective defining feature of the *bird* category is the presence of feathers. However, feathers are only a minor factor in human interaction with birds, which also includes experiences such as that birds move fast (preferably by flying), are voracious eaters, sing, build nests and lay eggs in them, and both birds and their eggs are often a source of food. The current popularity among non-scientists as well as many paleontologists of the theory that birds and dinosaurs are the same kind of creature has been facilitated by discoveries that some dinosaurs did move fast, eat a lot, and lay eggs in nests. Knowing that some dinosaurs exhibited behavior like the salient prototypical behavior of birds makes it easy to imagine these dinosaurs as “featherless birds”, a concept that would be oxymoronic under a featural analysis requiring feathers in order to belong to the bird category. It is the way we interact with birds that makes it possible for us to imagine the existence of dinosaurs that were really birds rather than reptiles (which do lay

¹³This result was published in Coleman and Kay 1981, and I have reduplicated it with students in class demonstrations over the course of nearly two decades. Though all of the samples involved are small, the consistency of results is compelling.

eggs, but nobody seems to want to call them birds, probably because they don't usually move very fast or eat very much, nor do they build impressive nests, etc.). The urge to categorize is very strong, and it seems that in order to process, store, manipulate, and access information, human beings need to organize it in categories. Even damaged, partial, and irrelevant information is run through this process, enabling people to make sense out of fuzzy or faded photographs, or to "see" various items in the shapes of clouds and inkblots. As neurobiologists have indicated, there is no "grandmother cell" in the brain that uniquely contains everything you know about your grandmother, nor is any other information stored as discrete bits. Instead all information is distributed and interconnected. Not only is information arranged in categories, but these categories are related to one another, and further participate in a hierarchy of categorization involving subordinate and superordinate levels. All of the categories we have looked at in this section have been basic-level categories, which generally correspond with monomorphemic linguistic units (like *bird*, *chair*, *mother*, or a grammatical morpheme). The subordinate level provides finer detail clustered around members of a given basic-level category (thus the category of *armchairs*, with ones that recline or swivel and ones that do not, etc., would be a subordinate category). The superordinate category of *furniture* includes the chair as one of its more prototypical members (with items such as chaise-longues, ping-pong tables, standing lamps, and cabinet-style television sets as relatively more peripheral examples of furniture). Subordinate, basic, and superordinate levels are not simply concentric sets; these relationships are complex and follow the center/periphery structure. Radial categories of all types (organizing lexical meaning, grammatical meaning, and hybrid types) are constitutive of mental spaces that structure both thought and language use. Furthermore, Lamb (1999) has shown parallels between the structure of the brain and the structure of radial categories, suggesting that radial categories are indeed neurologically plausible. A radial category is not necessarily composed of unique, discrete members, each occupying a single slot in a structure defined by a single set of relations to the prototype. Cognitive categories are not in the business of pigeon-holing information anymore than the brain is in the business of growing "grandmother cells". Often there are category members that fit into a given category in more than one place (or in a transitional zone between parts of a category) and/or are related to the prototype in more than one way. Cognitive linguists refer to such category members as "multiply motivated", and do not eschew such redundancy, since it is a natural part of human cognition. The recognition of multiply motivated category members allows us to analyze and account for phenomena of ambiguity and overlap, which are rampant in natural languages, but frequently ignored by linguistic theories. Langacker (2006) reminds us that overall linguists tend to be more attracted by models that emphasize discreteness instead of models that emphasize continuousness of phenomena. The radial category, for example, lends itself to an overly discrete interpretation that suppresses the real continuousness of category structure. Langacker suggests instead a model that looks like a mountain range, where the peaks (that are equivalent to the subcategories or members of a radial category) are joined by continuous zones that connect them in multiple ways. In addition to the prototype, many cognitive linguists (especially Langacker and his students) posit an overall abstract schema that sums up an entire category and relates to all the members. This concept is probably more important and more understudied than most of us realize. Cognitive linguistics still has quite a bit of work to do in order to research, develop and ultimately define the role of the overall abstract schema (perhaps best described as "firstness" for those familiar with Peircean semiotics). While the examples presented in this

section have focused on lexical items such as mother and chair in English, radial semantic structures are also found among linguistic categories and thus form the backbone of grammar. I have for example examined Russian cases as radial categories (Janda 1993c, 1999b, 2000). The Russian genitive case is a basic level radial category with a prototypical member (SOURCE) and three extensions (GOAL, WHOLE, REFERENCE) motivated by metaphor and metonymy. Subordinate structures organize smaller details of meaning (such as the metaphorical implementation of the SOURCE meaning in the various domains of space, time, etc.), and the basic level category of the genitive participates in a superordinate category of case relationships in general.¹⁴ There is evidence that this kind of organization motivates most (perhaps all) linguistic phenomena.

4.6. Mental Spaces and Mapping

Cognition and the use of language involve the access and manipulation of mental spaces. Mental spaces are constructed from human perceptual experience and are extended through imaginative mapping processes. The three most significant processes are metaphor, metonymy, and blends. All three processes are vital to linguistic analysis. Although much of the scholarly work that has been done on metaphor, metonymy, and blends focuses on the meanings of lexical items, these cognitive processes are likewise vital to the structure of grammatical meaning. Of course this is exactly what we should expect, given that grammar and lexicon form a single continuum, governed by the same general cognitive strategies. Metaphor, metonymy, and blends appear to have neurological analogs. It is believed that eye-hand coordination is achieved by mapping vectors of eye angles onto vectors of muscle contractions, in other words, taking information from one domain (eye positions) and transferring this information to find “equivalents” in another domain (muscle positions) (Churchland 1986), a process that looks very much like metaphor. Feldman (2006) asserts that metaphor is consistent with the architecture of the brain. A computer simulation of human retinal cells (Churchland 1995: 236-242) reveals that our visual perception focuses on certain information (particularly movement and edges), largely ignoring other possible inputs. Thus we tend to see moving parts and edges rather than wholes, and this seems to parallel metonymy. These analogs do not mean that we know how metaphor and metonymy work on the biological level, but they do mean that metaphor and metonymy at least appear to be biologically plausible (whereas serial processing of ordered rules seems much less promising, given what we know about brain structure and neural processing time).

4.6.1. Metaphor

For a cognitive linguist, the definition of metaphor is very broad. A metaphor is a mapping from a source domain to a target domain. In other words, whenever a person takes a

¹⁴The most prototypical member of the superordinate category is the nominative case (which is why we think of it as the “default” case in dictionaries, on signs, etc.). Accusative is somewhat more peripheral (opposing the nominative as an agent to the accusative as a patient in a prototypical SVO clause). The genitive is even more peripheral, since it does not involve the verb (central to the structure of a clause). And the instrumental, dative, and locative are relatively peripheral in relation to the nominative, accusative, and genitive, respectively. In other words, Jakobson ([1936]1971) was right, and indeed much of his work on case (and other phenomena) looks to a cognitive linguist like it was ahead of its time.

concept that has been formed in one domain and tries to implement it in another, a metaphor has occurred.¹⁵

The domain in which most human knowledge is formed is that of a human body in physical space, which usually serves as the source domain for metaphor. Common target domains are time, emotions, and states of being. As mentioned above, babies become acquainted with their bodies as containers by practicing putting things in their mouths. After this routine has been established, they move on to placing objects in other containers, and many baby toys are designed just for this task. On a crude level, even this is a metaphor, for the concept IN/OUT has thus been mapped from the body to external objects. Later, babies will learn to extend IN/OUT to many other domains; in English these include time (*getting things done in time* and *running out of time*), emotions (*falling in* and *out of love*), and states of being (*getting into* and *out of trouble*). The ways in which metaphorical extensions are realized and conventionalized are highly language-specific, but the metaphorical process itself is a pervasive universal. Metaphor is a very robust phenomenon for all languages. It is quite impossible to speak any language without mastering the metaphorical conventions embedded in it.

Lakoff and Johnson (1980) identify three basic types of metaphor: orientational metaphor, ontological metaphor, and structural metaphor. Orientational metaphor is the extension of orientations such as IN/OUT, UP/DOWN, FRONT/BACK to non-spatial domains. Ontological metaphor is the conceptualization of non-things (emotions, abstract ideas, ambient phenomena) as if they were things (usually entities, substances, or places), as in *We are working toward peace* (where peace is conceived of as an object or place), or *His emotional health has deteriorated recently* (where emotional health is an object subject to deterioration). Structural metaphors take an item with rich structure in bodily experience as the source domain for understanding something else. For example, the structural metaphor PEOPLE ARE PLANTS underlies many metaphorical expressions, enabling us to refer to the growth of children as *sprouting up*, youth as a *blossom*, old age as a time of *withering and fading*, and the slaughter of soldiers as being *mowed down*. The three types of metaphor are not entirely discrete and often collaborate in a given expression. *Falling in love*, for example, uses all three types: an orientational metaphor extending the use of *in*, an ontological metaphor identifying *love* as a place, and a structural metaphor that maps our understanding of physical falling onto our understanding of an initial encounter with love. Languages make use of all three types of metaphor in their grammars. Orientational metaphors are quite routine (often involving cases, prepositions, and prefixes), and they typically collaborate with ontological metaphors (as in *getting things done in time*, *running out of time*, where time is a container or a substance). Grammatical case uses a structural metaphor mapping our

¹⁵Notice that under this definition there is no substantive difference between metaphor and simile, or, to be more accurate, all similes are actually metaphors. US public education never fails to indoctrinate all children with the belief that there is an important difference between the two, and disabusing them of this notion at the college level can be quite a challenge. The difference they have learned to cherish is one of superficial syntactic variations on metaphorical expression that has little bearing on the substance of the comparison. It also hides the fact that there are more ways to produce metaphor than by saying that “x is y” or even that “x is like y”. Metaphor is present in all kinds of syntactic situations, and can be expressed by all kinds of morphemes. Here are two examples with an adjective (firey) and a verb (beefing): firey anger; authorities are beefing up security at area schools (see also the metaphors using IN and OUT and those that motivate Russian aspect described in this section)

experience of physical relationships to understand the abstract relationships among referents in a sentence.

Though it appears that all languages of the world make use of TIME IS SPACE metaphors (Haspelmath 1997b), it seems that every language does this in its own way. One example that I am very familiar with is the aspectual system of Russian. All Russian verbs identify the situations they describe as either perfective or imperfective. This grammatical distinction is motivated by a pair of metaphors: PERFECTIVE IS A DISCRETE SOLID OBJECT and IMPERFECTIVE IS A FLUID SUBSTANCE (Janda 2004). The rich source domain of physical matter yields over a dozen parameters according to which verbal situations can be differentiated, such that perfective situations are characterized by clear boundaries, uniqueness and countability, whereas imperfective situations are characterized by lack of clear boundaries, spreadability, and mixability. The metaphorical understanding of verbal situations as isomorphic to types of matter makes it possible for Russian grammar to organize a large complex of distinctions in a coherent way.

The mapping that metaphor performs is usually highly selective. It is by no means a one-to-one mapping of all the information from a source domain to a target domain. For example, the fact that in English we use fire as a source domain for understanding anger (cf. Lakoff 1987: 380-415; *His temper is like a powder-keg, She's white-hot with rage, I'm fuming, doing a slow burn*, etc.) does not mean we expect anger to be something we can light with a match, use for cooking, or that we will have to clean up ashes afterward. Like the prototype, metaphor is motivated by relevant information that is salient in human experience; it highlights some facts about the target domain, but hides others. The behavior of metaphor is likewise well-motivated but not entirely predictable.

For the purposes of grammatical analysis, metaphor is equally essential. Metaphors involving IN/OUT, as mentioned above, and similar metaphors based on kinesthetic image schemas are valuable for exploring the meaning and grammatical functions of cases, prepositions, and all sorts of linguistic categories and functor words. Iconicity is properly understood as a metaphorical phenomenon, for it is the mapping of a parameter from one domain to another. Analogy in both the broad ordinary sense and in the specific linguistic sense of analogical change is likewise the product of a metaphorical transfer of information from one place (usually a paradigm) to another.

When linguists recognize and focus on the central role that metaphor plays in language, it becomes possible for us not only to better understand grammatical phenomena, but also to participate in cultural studies and poetic analysis (cf. Janda 2008, Lakoff and Turner 1989, Palmer 1996, Turner 1987). The difference between the types of metaphors prevalent in linguistic categories and those encountered in creative expression is not a matter of quality, but rather a matter of the degree to which certain metaphors have become conventionalized in a given language and culture. Conventionalized metaphors form the backbone of linguistic categories, idioms, clichés, expository prose, and ritual. Creative use of writing contains metaphors that are either less conventional (being extensions of conventional metaphors, cf. the jokes mentioned in footnote 1), or altogether unconventional.

It is instructive to note that most scientific theories are based on metaphors, and that the inferences we draw from theories are influenced by our understanding of these metaphors. Set theory is the IN/OUT image schema writ large. The modern understanding of the chemical structure of benzene arose from an iconic metaphor inspired by a dream of a snake biting its tail. Understanding of atomic structure underwent many metaphorical realizations in the 20th

century, going from a grapes in gelatin model, to a model of a miniature solar system, to a mathematical probability model. Light continues to be understood partly according to a metaphor based on waves and partly according to a metaphor based on particles. Closer to home, the vowel triangle is a metaphor that helps us predict which vowels are likely to turn into which other vowels because they are “closest” to each other. Radial categories are likewise a metaphor of our experience of points and links (rather like the old tinkers toys).

The presence of metaphors in scientific theories is not a problem unless we forget that they are metaphors and assume that we are just dealing with raw “truth”. Metaphors facilitate understanding and lend power to our theories, and they often inspire us to draw inferences that we might otherwise overlook. However, they can also inspire us to draw incorrect inferences or can shade our eyes from inferences that we should consider (were we not so enamored of the current metaphor). We need to be able to not only recognize and respect metaphors, but also to look beyond them (Langacker 2006).

4.6.2. Metonymy

Metonymy is present whenever one item, the “vehicle” stands in for another item, the “target”. Metonymies can thus be modeled as VEHICLE FOR TARGET formulas. If I say *Dostoevsky takes up a whole shelf in my library* I am using an AGENT FOR PRODUCT metonymy, where the agent, Dostoevsky, stands in for his products, i.e., books he has authored. Similarly, an utterance like *The ham sandwich wants his check* is an example of POSSESSED FOR POSSESSOR metonymy, since the possessed ham sandwich stands in for the person who has (or had) it. Most work on metonymy has thus far focused on lexical metonymy (such as the examples above), and there are roughly three main strategies for classifying metonymy, involving contiguity, frames, and domains. Jakobson ([1956]1980) pioneered the understanding of metonymy as a kind of contiguity relationship, and this is echoed in Croft’s definition of metonymy as a mapping within a single “domain matrix”.

The most recent version of the contiguity model is found in Peirsman and Geeraerts 2006, where four levels of contiguity are distinguished (part/whole, containment, contact, and adjacency) along a scale of prototypicality. The use of frames to model metonymy has been particularly popular in cognitive linguistics (Kövecses and Radden 1998, Radden and Kövecses 1999, Panther and Thornburg 1999, Barcelona 2002). Under this model, it is the fact that items such as customers, meals ordered, waiters, and checks all belong to a single “restaurant frame” that motivates metonymies such as the one in the *ham sandwich* example above. The frame approach is very similar to that invoking domains (or “dominions” Croft 1993, 2006; Langacker 1993, 2009; Ruiz de Mendoza 2000).

All phenomena of ellipsis, truncation, and phonological reduction/neutralization are linguistic examples of metonymy. Very common uses of metonymy in the world’s languages are the reduction of movement along a path to either a stationary path or just the endpoint of a path. English over provides examples of both types of reduction. We can invoke movement along a path by saying *Bill walked over the hill*. This can be reduced to a stationary path in *The road goes over the hill*. A statement like *Bill lives over the hill* accesses only the endpoint of the path described by *over*. Similar use of endpoint metonymy is common in the semantics of grammatical case.

In my work on the dative case in Slavic, I have argued that metonymy has been used to extend the indirect object to constructions lacking a direct object (Janda 1993a). There are many verbs (especially verbs that denote the giving of money/gifts, giving of messages, and

giving of good/evil, such as the Slavic equivalents of ‘pay’, ‘advise’, and ‘please’/‘hamper’) that denote the giving of something that is so predictable from the meaning of the verb itself that there is no need to express the something given as an accusative direct object. We know, via metonymy, that when we pay someone, we are giving them money; when we communicate with someone, we are giving them a message; and when we please or hinder someone, we are giving them a good or hard time. This metonymy motivates the use of the indirect object, and therefore the dative case, with a host of verbs which otherwise look rather like a random list. A huge system of semantic associations is present in the word-formation systems of most languages of the world, and these associations are primarily motivated by metonymy (Janda forthcoming). Thus, for example, in English we can form *cellist* from *cello* via an INSTRUMENT FOR AGENT metonymy, and *baker* from *bake* via an ACTION FOR AGENT metonymy. Word-formation is thus another example of how metonymy pervades the grammar of languages, and indeed as Langacker (2009) asserts, grammar is metonymic by its very nature. It is certainly the case that metaphor and metonymy can interact in a single linguistic expression (Goosens 1990, Geeraerts 2002). When Johnny Cash sings *Many days you have lingered all around my cabin door, Oh hard times, come again no more*, he is invoking both metaphor and metonymy simultaneously. Metaphorically, hard times are represented as a person who can be located by the door and directly addressed. Metonymically the location of the door refers to the setting in which a person is living, so having the hard times at your door means that one is living in a period of hard times.

4.6.3. Blends

Like metaphor, a blend involves two domains and a mapping relationship (Fauconnier and Turner 2002). However, in a blend both domains are source domains, and together they contribute to the creation of a third, entirely new domain. For example, if I were to talk about a discourse between Roman Jakobson and cognitive linguistics, I might say that Jakobson made certain contributions (such as the “relative invariant”), which cognitive linguistics reacted to (suggesting prototypes instead), and that Jakobson did not accept all the premises of cognitive linguistics, etc. This discourse is of course hypothetical and anachronistic, since Jakobson died in 1982, several years before anyone ever used the term “cognitive linguistics”. The discourse is a blend constructed from Jakobson’s work and work on cognitive linguistics. On the morphological level blends are fairly common and are traditionally called just that: blends. Morphological blends include the coinage of words like *motel* (from *motor* + *hotel*) or *workaholic* (from *work* + *alcoholic*). Blends also occur at the level of the linguistic category. The historical development of virile endings from what was originally dual morphology in some Slavic languages appears to be the result of a blend in which special distinctions that could be made in the plural number and special distinctions that could be made in the masculine gender contributed to the creation of a special plural masculine distinction, namely virility (Janda 1999a).

4.7. Construction Grammar

Construction grammar can be understood as an outgrowth of Langacker’s (1987: 58) definition of grammar as “symbolic units” which pair form (phonological pole) with meaning (semantic pole). A construction is any conventionalized pairing of form and meaning in

language, at any level, from the level of the morpheme, through words and phrases, and up to the level of discourse. Although construction grammar comes in several “flavors” -- cf. the slightly different versions offered by Langacker (1987, 1991a-b, 2003), Croft (2001), Goldberg (1995 and 2006), and Fillmore (Fillmore 1985, Kay and Fillmore 1999) -- they all share a similar view on the relationship between the parts and the whole in a construction.

A construction cannot be adequately described by means of recourse to compositionality because the meaning of the whole is only partially determined by the meanings of the components. And conversely, the meaning of the parts is clearly influenced by the meaning of the whole. The failure of compositionality is clearest in the case of idioms like *he kicked the bucket*, where the whole has a meaning that cannot be arrived at from the parts. Construction grammarians will quickly point out that idioms are only the extreme end of the scale, and that all constructions are idiomatic to some extent. Even the conventionalization of SVO as a typical transitive construction can be considered schematically “idiomatic”. The converse effect of the whole influencing the meaning of the parts is most visible in examples of “coercion” such as *Alice sneezed the napkin off the table* and *There is dog all over the road*. In the first example, the caused-motion construction (verb + object + direction) coerces a strongly intransitive verb, *sneeze*, to behave like a transitive verb. In the second example, the use of a singular verb form in a context describing a substance coerces a count noun, *dog*, to behave like a mass noun. Again, scholars who work in construction grammar assert that this is only the tip of the iceberg, and that all constructions show this effect to various extents. In some collaborative work (Janda and Solovyev 2009), I have explored how case constructions used with Russian emotion terms reflect the conceptualization of emotions as containers, gestures, diseases, and sources. In other words, the use of emotion terms in the same constructions where we find containers (e.g., with prepositions meaning ‘in’, ‘into’), as in *v pečali* ‘in sadness’ reveals that sadness can behave like a container in Russian. The meaning of each construction is emergent (Langacker 1991b: 5-6, 534), motivated by the patterns of uses over the various items that appear in the construction, and also by the larger (clause- or discourse-level) constructions that a given construction appears in.

Goldberg (2006: 62, 46) claims that it is unlikely that speakers store all uses of given words and constructions, but there is evidence that people use generalizations about the frequency of word use (cf. also Dąbrowska 2004 for evidence of both storage and generalization in acquisition of constructions). These generalizations can serve as the basis for creating abstract schemas for constructions, establishing correlations between form and meaning. Goldberg (2006: 104-119) argues that constructions have strong associations with meaning by virtue of their advantages in terms of both cue validity and category validity. Cue validity refers to the likelihood that a given meaning will be present given the presence of a certain item.

In a study comparing the cue validity of words (verbs) with constructions, Goldberg found that words and constructions have roughly equal cue validity, which means that knowing that a linguistic unit contains a given word gives you about the same predictive information as knowing that a linguistic unit occurs in a given construction.

However, because there are far fewer constructions than lexical items in a language, constructions are far more available in terms of determining meaning. Category validity is the likelihood that a certain item will be present when the meaning is already given.

In Goldberg’s studies the category validity of constructions is found to be far higher than that of words (verbs). In other words, if you know that a unit expresses a certain meaning, it is

much easier to predict what construction might be present than to predict what word the unit might contain. Goldberg has thus empirically established the connections between constructions, frequency and meaning.

Construction grammar has become an important sub-field of cognitive linguistics, with significant publications (Östman and Fried 2005), and international organization, and a conference series. The presence of frequency effects in relation to constructions has fueled much of the application of quantitative methods in cognitive linguistics, described in more detail in 5.1.

5. ADVANTAGES OF COGNITIVE LINGUISTICS

Cognitive linguistics offers a number of advantages over some other linguistic frameworks, particularly in relation to the range of language phenomena it can address and in relation to researchers' need to communicate their results. I would contend that cognitive linguistics facilitates the analysis of far more language data, and that the results of analysis are far more accessible to others both within and particularly beyond the field of linguistics.

5.1. Cognitive Linguistics Is Data-Friendly

From the very beginning, cognitive linguistics has been a refuge for linguists who are intimately acquainted with real language data and have a profound respect for empirical methods. The most outstanding contributions made by cognitive linguists continue to be insightful analyses of intricate sets of naturally-occurring data performed by linguists with a subtle and detailed understanding of the languages they work on. Although theory is a crucial concern, it is treated as something that emerges gradually from and must be constantly verified against data. It is impossible for a proper cognitive linguist to imagine "marshalling data to support theory" (an exact quote in which I heard one non-cognitive linguist praise another for his unswerving devotion to theory). Whenever I hear an expression of this sort, I shudder to think what this means: Was the data forced into conform to pre-determined regiments? What happened to the "naughty" data that didn't support the theory? Was it banished from consideration? Where did the data come from? Was it real data (spontaneously produced by native speakers under natural conditions)? Or not (concocted, elicited, etc.)? I rejoice in finding the "naughty" data that challenges us to stretch or change our theory. This "naughty" data need not be the least bit exotic or ungrammatical – it's usually hidden in plain sight, until you gather a database of real usage or peer into a corpus. I always start every project by gathering as much data as I can before worrying too much about how it might be organized, and I likewise insist that all my students "get their hands dirty" with some data before settling on an analysis. There is much that can be learned about linguistics by simply gathering and sifting through data, and no amount of theory or classroom lecturing is a substitute for this experience.

The framework of cognitive linguistics (especially the radial category and metaphorical extensions of it) is particularly adept at handling analyses of very messy arrays of data. There is never any motive for hiding or ignoring "problematic" data, primarily because cognitive

linguistics is interested in finding internal structures, however fine-grained, rather than airtight immutable boundaries for categories. The “ugly ducklings” that are often shunned by other theories are properly appreciated for their beauty in this framework. For example, the Russian verb *zavidovat* ‘envy’ bears no close affinity to any other “dative-governing” verbs, but it serves as an important transitional type linking two parts of the semantic category of the dative case (Janda 1993c). Case usage is itself an example of a relatively messy phenomenon for which cognitive linguistics provides an ideal solution, making it possible to respect all the variation while producing a coherent analysis. This not only facilitates the description of a given case in a given language, but it also makes cross-linguistic comparisons relatively easy and transparent (a feat not previously achievable). Case semantics is only one of the enduring, intractable problems of Slavic linguistics for which the cognitive framework is likely to provide elegant solutions.

Cognitive linguistics is an excellent framework for probing both the complete range of language use (all natural production, including errors, anomalies, creative use, poetry, idioms, even “dead metaphors”) and the complete range of language phenomena (phonology, morphology, syntax, and semantics).

In the past decade, more and more cognitive linguists have taken the usage-based model of cognitive linguistics seriously by applying quantitative analyses to corpus and experimental data. This empirical movement has been facilitated by the advent of digital corpora and statistical software. Stefanowitsch and Gries (2003, 2005) have pioneered “collostructional analysis”, which takes a grammatical construction as the point of departure and investigates to what extent lexical items are attracted or repelled by constructions. Stefanowitsch (2006 a and b) has proposed statistical means for analyzing metaphorical expressions. Newman and Rice (2006) have examined the relationship between paradigm-form frequency and semantics of verbs. Divjak (2006; cf. also Divjak and Gries 2006) explores the “behavioral profiles” of Russian verbs, namely the way that grammatical, semantic, and constructional factors interact statistically. Schmid has probed the relationship between frequency and entrenchment, first asserting a direct relationship (2000), and then finding that model inadequate (2007a-b). These are just a few examples of where cognitive linguistics is headed in terms of quantitative analysis. In 2005 Mouton de Gruyter launched the journal *Corpus Linguistics and Linguistic Theory* as a venue for this promising line of research.

5.2. Cognitive Linguistics Is User-Friendly

The absence of an entrenched formalism has its advantages. A cognitive linguist never has to build a mountainous formal machine to strain at a gnat (or any bigger prey, for that matter), and no one has to master a formal system in order to appreciate research in cognitive linguistics. This means that cognitive linguistics research is readily accessible to all linguists, and also that cognitive linguists can focus more of their effort on collecting and analyzing data than on toying with the formal artifacts of a theory. With minor adaptations, research done in cognitive linguistics can be made accessible to other audiences. This is particularly valuable for those of us who wish to communicate with colleagues in other fields, or for researchers who submit grant proposals that will be evaluated both by linguists and by other scholars. More important is the fact that cognitive linguistics facilitates the transfer of

research to teaching; it allows us to make our research breakthroughs available to students. Rather than encouraging the production of arcane scholarship, too often consisting of minutiae hopelessly embedded in complex and counterintuitive frameworks, cognitive linguistics facilitates the production of scholarship that is actually useful, both to scholars and to students.

Case and aspect are universally acknowledged as the greatest stumbling-blocks for learners acquiring a Slavic language as a second language. I have coauthored two textbooks on the case systems of Slavic languages (Janda and Clancy 2002, 2006), plus a media module on the Russian aspect system (<http://hum.uit.no/lajanda/aspect/ainr/>). These materials take the full complexity of my research on case and aspect and make them accessible to language learners with no linguistic expertise. These learner-oriented materials contain virtually no terminology; the most difficult terms encountered are “verb”, “preposition”, and the like. Formalism is also nearly non-existent; the use of diagrams is the closest we come to formalism, yet is itself mainly decorative, since the contents of the diagrams are also rendered in everyday prose and the materials can be comprehended without recourse to the diagrams. In studying the meanings Russian cases, learners are asked to build upon their everyday experiences (of orientation, forces, and movement along a path, for example), and to use metaphor to extend spatial concepts to other domains such as time and states of being (guided by familiar and parallel metaphorical extensions in English). The strategy for learning Russian aspect is similar, asking learners to rely upon their “sandbox” knowledge of how various kinds of physical matter behave and interact. In the latter materials, interactive units lead the learner through virtual “experiments” with matter (asking which kinds of matter can be sliced or spread, for example), and provide comparisons with authentic examples of Russian aspect. Perhaps it is immodest of me to say so, but the reaction to these materials has been enthusiastic, proving that cognitive linguistics can be made utterly transparent and valuable for many people other than cognitive linguists. The 2002 book on Russian case won a nationwide award (for pedagogy, from the American Association of Teachers of Slavic and East European Languages). The 2006 book has found an audience that we never imagined: it is being used to teach deaf citizens in the Czech Republic to read Czech (since case is non-existent in Czech Sign Language, and thus just as exotic a phenomenon for those learners as for learners with a non-Slavic spoken language as their first language).

CONCLUSION

This article reflects my personal perspective on cognitive linguistics, which has now grown to the point where it is almost impossible for any one individual to have full oversight over the entire field. In closing, I would like to remind both myself and everyone else that all theoretical frameworks, cognitive linguistics included, are built upon metaphorical models, and all metaphorical models reveal some truths and suggest some questions while suppressing other truths and other questions that might be asked. In other words, neither cognitive linguistics nor any other framework is entirely comprehensive; no one framework is THE answer to all our problems. Some frameworks are more apt than others, particularly at addressing given issues. Cognitive linguistics happens to be a great way to deal with the kinds of puzzles that light my fire: grammatical meaning, polysemy, and historical change. But

ultimately the use of any one framework shutters one's eyes one from other opportunities for inquiry. If we cannot communicate across theories, we risk a fate like the proverbial three blind men encountering an elephant: one finds the ear and declares that an elephant is like a sheet of leather, one finds the side and declares an elephant to be like a wall, and the third finds the tail and declares an elephant to be like a rope. The results of their research are entirely incompatible and they are unable to find any common ground on which to base a discussion. Cognitive linguistics offers one view of linguistic inquiry. Thus far I've enjoyed that view and never run out of things to see from this vantage point, and I've also tried to make my contributions as accessible as possible to others who might want to join me. I've attempted to peer at language phenomena from other points of view now and again (more as a spectator than as a participant), but too often found unnecessary theoretical artifacts in my way. It is my sincere hope that more bridges to frameworks beyond cognitive linguistics will be built as we progress.

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Chapter 70

CONCEPTUALIZATION, SYMBOLIZATION, AND GRAMMAR*

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ABSTRACT

Cognitive grammar belongs to the broader traditions of cognitive linguistics and functional linguistics. It emphasizes the symbolic function of language and the crucial role of conceptualization in social interaction. It is based on a conceptualist semantics recognizing the central importance of construal, i.e., our ability to conceive and portray the same situation in alternate ways.

A properly formulated conceptualist semantics makes possible a symbolic account of grammar. It is claimed that lexicon and grammar form a continuum fully describable as assemblies of symbolic structures (form-meaning pairings). Grammar is therefore meaningful, and valid grammatical notions have conceptual import. By way of example, a variety of evidence is cited to support semantic characterizations of subject and object.

Keywords: cognitive grammar, cognitive semantics, conceptualization, construction, grammatical category, object, profile, prominence, psychological evidence, subject, symbolization

INTRODUCTION

Language has two basic and closely related functions: a *semiological function*, allowing thoughts to be symbolized by means of sounds, gestures, or writing; as well as an interactive function, embracing communication, expressiveness, manipulation, and social communion. A pivotal issue in *linguistic theory* is whether the functions language serves should be taken as foundational or merely subsidiary to the problem of describing its form. The recognition of

*This article is adapted and updated from Langacker 1998.

their foundational status is the primary feature distinguishing functionalist approaches to language from the formalist tradition (notably generative grammar).

The movement called *cognitive linguistics* belongs to the functionalist tradition. Although its concern with cognition hardly makes it unique, the label cognitive is not entirely arbitrary. Within functionalism, *cognitive linguistics* stands out by emphasizing the semiological function of language and the crucial role of conceptualization in social interaction. It contrasts with formalist approaches by viewing language as an integral facet of *cognition* (not as a separate “module” or “mental faculty”). Insofar as possible, linguistic structure is analyzed in terms of more basic systems and abilities (e.g., perception, attention, categorization) from which it cannot be dissociated.

The theory called *cognitive grammar* (Langacker 1987a, 1990, 1991, 2008) represents one approach to cognitive linguistics. Its central claim is that grammar is per se a *symbolic* phenomenon, consisting of patterns for imposing and symbolizing particular schemes of conceptual structuring. It is held that lexicon, morphology, and syntax form a continuum fully describable as assemblies of *symbolic structures* (form-meaning pairings), and consequently, that all valid grammatical constructs have conceptual import. While quite radical from the standpoint of orthodox linguistic theory, these positions are actually both natural and desirable.

Reducing grammar to symbolic assemblies affords a major theoretical unification as well as great austerity in the kinds of entities analysts are allowed to posit. It is realistic from the psychological standpoint, for unlike semantics and phonology—grounded in the broader realms of conceptualization and sound—grammar is not connected to any independently accessible domain of experience. It is more naturally taken as residing in schematized representations of sound-meaning pairings, abstracted from (and immanent in) the specific symbolic configurations observable in complex expressions. Described in this manner, grammar (like lexicon) can be seen as directly reflecting the semiological function of language.

Although the analyses and theoretical claims of cognitive grammar are proposed and justified on the basis of linguistic evidence, some care is taken to stay within the bounds of psychological plausibility. A guiding principle is that language structure should be characterized relying only on mental abilities and phenomena that are either well known or easily demonstrated. This leads to a primary working strategy (described in Langacker 1993a) based on the convergence of three kinds of considerations.

The objective is to find descriptions of linguistic elements that simultaneously meet the conditions of being (i) reasonable from the psychological standpoint, (ii) well motivated in purely semantic terms, and (iii) optimal as a basis for analyzing grammar. In my view this methodology has proved quite successful. It is argued in various works (e.g., Langacker 1995b; van Hoek 1995) that conceptually grounded descriptions satisfying conditions (i) and (ii) support revealing accounts of classic grammatical problems. The advantages of reducing grammar to symbolic assemblies are not purchased at the expense of descriptive adequacy, but quite the contrary.

The presentation will begin by sketching a conceptualist approach to semantics. We will next consider symbolic assemblies and the gradation between lexicon and grammar. Following this will be a discussion of how cognitive grammar handles some basic problems of grammatical description.

Finally, as a case study, an attempt is made e.g., to justify (or at least render plausible) a conceptual characterization of the grammatical notions subject and object. The supposed impossibility of such a characterization is of course a central argument for the autonomy of syntax.

1. SEMANTICS

Views of grammar are critically dependent on assumptions made about semantics. In particular, the autonomy of grammar appears self-evident given the prevalent assumption that meanings consist of truth conditions. The meaningfulness of grammatical elements becomes apparent only by adopting a conceptualist semantics that properly accommodates our ability to conceive and portray the same objective situation in alternate ways. The term *conceptualization* is interpreted broadly as embracing any kind of mental experience. It subsumes: (i) both established and novel conceptions; (ii) not only abstract or intellectual “concepts” but also sensory, motor, and emotive experience; (iii) conceptions that are not instantaneous but change or unfold through processing time; and (iv) full apprehension of the physical, social, cultural, and linguistic context. Thus, far from being either static or solipsistic, conceptualization is viewed as the dynamic activity of embodied minds interacting with their environment.

Linguistic semantics has traditionally posited a definite boundary between “semantics” and “pragmatics”. It is further assumed that lexical items have fixed, well-delimited meanings (far less inclusive than speakers’ general knowledge of the entities they denote), and that sentence meanings are fully derivable from lexical meanings by rules of semantic composition. Attractive though it is, a semantics of this sort is actually quite problematic. It reflects the dubious metaphorical supposition that linguistic elements are containers from which discrete components of meaning need only be extracted and assembled in building-block fashion (cf. Reddy 1979). In practice, motivated boundaries between “linguistic” and “extralinguistic” facets of meaning have proved notoriously hard to establish.

The basic vision of *cognitive semantics* is radically different. Rather than imposing artificial boundaries, it posits a gradation between semantics and pragmatics, and also between linguistic and general knowledge. It views expressions as evoking (rather than containing) meanings, which emerge via an elaborate process of *meaning construction* drawing on all available resources—linguistic, psychological, and contextual. Even at the lexical level, meanings are variable and malleable. The *encyclopedic* approach (Haiman 1980; Langacker 1987a: §4.2; cf. Wierzbicka 1995) treats lexical items as points of entry into vast conceptual networks. While the access they afford to these networks is to some degree conventionally established, it is nonetheless flexible, open-ended, and highly subject to priming. To the extent that distinct paths of access become entrenched and conventionalized, the result is the common situation of *polysemy*, where a lexical item has a number of related senses, any one of which might be activated on a given occasion. These senses form a *complex category* describable as a network, usually centered on a prototype (Lakoff 1987; Langacker 1987a: ch. 10; Taylor 2004).

At higher levels of organization, the essential role of meaning construction is even more evident. Multifaceted research in cognitive semantics has demonstrated that the meanings of

complex expressions are not in general algorithmically derivable from their parts—at least given a representative range of data (not selected just to avoid the problem) and a realistic definition of “meaning” (not so impoverished as to be trivial in relation to natural language understanding). Patterns of semantic composition do of course exist (they are considered an inherent aspect of grammar) and their importance is undeniable. Still, since language is neither autonomous nor encapsulated, semantically it exhibits only *partial compositionality*. The meanings contributed by lexical and grammatical elements evoke and constrain—but do not fully constitute—the overall conceptualization evoked by a complex expression, its composite semantic structure. This is an entity in its own right with many possible sources of extracompositionality.

It may, for instance, be crucially dependent for its coherence on discourse or contextual clues to supplement the fragmentary information explicitly encoded. It may invoke domains of knowledge not accessed by any component element taken individually. It is likely to require the construction and manipulation of an elaborate set of connected *mental spaces* (Fauconnier 1985; Fauconnier and Sweetser 1996). Almost certain to be involved are basic and ubiquitous phenomena such as *metaphor* (Lakoff and Johnson 1980; Lakoff and Turner 1989), *metonymy* (Langacker 1995b; Nunberg 1995), and *conceptual blending* (Fauconnier and Turner 1994, 1996, 2002). It might then seem attractive to distinguish between *evoked* and *encoded* meaning, equating semantic structure with just the latter (Harder 1996). The feasibility of such a move is anything but obvious, however. There is no clear boundary between evoked and encoded meaning, nor is the latter necessarily either independently coherent or separately apprehended.

Fundamental to cognitive semantics is *construal*, our manifest capacity for conceptualizing the same situation in alternate ways. At least for mortals, construal is inescapable—there is no completely neutral way of apprehending a situation (though there are of course defaults). Meaning is thus a function of both conceptual “content” and how that content is construed.

As an inherent aspect of their conventional semantic value, linguistic elements impose a particular construal on the content they evoke, and speakers adopt it for purposes of linguistic expression. Differences in conventional patterns of construal are largely responsible for the impression that languages embody contrasting “world views”. A strong claim of linguistic relativity, that language drastically and unavoidably shapes thought, is not however warranted. The effect of linguistically imposed construal may be fairly superficial (Slobin 1987). The content evoked by expressions can be largely the same (affording the basis for understanding and rough translation) even when they construe it very differently. Moreover, the symbolic resources of a single language provide an enormous range of options for construing any given situation, and speakers show great dexterity in shifting from one to another.

One dimension of construal is “granularity”, i.e., the degree of precision and detail with which a situation is characterized. The lexicon of a language allows an entity to be described at varying levels of *specificity* (conversely, *schematicity*), the choice depending on circumstances and communicative objectives. For instance, the same feline might be described specifically as a *Siamese*, more abstractly (in coarser-grained detail) as a *cat*, and still more schematically with terms like *animal*, *creature*, or even *thing*. Complex expressions obviously allow indefinite variation along this parameter, as illustrated by the progressively more schematic descriptions in (1):

- (1) Your wretched Siamese just gobbled up my crème brûlée. > Your cat just ate my dessert. > An animal did something. > Something happened.

The meanings of grammatical elements are usually quite schematic (cf. Talmy 1988). This does not distinguish them sharply from lexical items, since the latter range widely along the dimension of specificity. There is rather a gradation, such that the more schematic an element is semantically, the more likely it is to be regarded by linguists as grammatical rather than lexical.

Numerous aspects of construal reflect a very general ability to conceive of one structure against the *background* provided by another. One kind of background consists of assumptions, expectations, and presuppositions, which expressions evoke with varying degrees of explicitness and specificity. Consider the sentences in (2), which might be used to describe the same objective situation.

- (2) (a) He has published few articles in refereed journals.
(b) He has published a few articles in refereed journals.

In (2)(a), *few* indicates that the quantity of articles is less than anticipated. By contrast, *a few* in (2)(b) assumes a baseline of zero and specifies a small departure from it in a positive direction. The difference between a negative vs. a positive displacement from a presupposed value is not without grammatical consequences. Observe that *any* co-occurs with *few*, but not with *a few*:

- (3) (a) He has published few articles which make any sense.
(b) *He has published a few articles which make any sense.

It is well known that *any* requires a negative context (e.g., *He doesn't have any money*, but **He has any money*). Its distribution in cases like (3) is thus sensitive to how the objective situation is construed in terms of background expectations.

The previous discourse constitutes an essential background for the current expression. Most obviously, previous specification in the discourse allows entities to be referred to more schematically than when they are first introduced:

- (4) My psychiatrist would prefer to interview patients in her own study. However, she never actually does it there.

Less often noted is the fact that expressions judged ungrammatical and semantically anomalous when considered in isolation often appear coherent, natural, and grammatically well formed when situated in the appropriate discourse context. For instance, while linguists would normally append an asterisk (for ungrammaticality) to a sentence like (5)(a), it seems perfectly appropriate when uttered in response to (5)(b).

- (5) (a) (*)I think diced slightly tipsy.
(b) Is there any way of preparing them so that Cedric might be willing to eat carrots while in any conceivable mental state?

It is a basic principle of cognitive linguistics that well-formedness judgments always presuppose some context, if only an implicit one based on default assumptions.

Another background phenomenon is metaphor, in which a *target domain* is construed in relation to a *source domain*. A theory, for example, can be viewed metaphorically as a building, an airplane, or even as a bucket (Lakoff and Johnson 1980):

- (6) (a) His theory rested on such poor foundations that, despite all his attempts to buttress it, it finally just collapsed.
- (b) Your theory just won't fly; in any case, it could be shot down by any half-way competent linguist.
- (c) That theory is full of holes; it won't hold water.

Categorization can also be considered a background phenomenon, in that the target is interpreted as instantiating a particular pre-existing conceptual frame. Even if the objective behavior is just the same, it makes a difference whether contributions to a political candidate are construed as *gaining access* or *buying influence*.

Numerous dimensions of construal can be grouped under the rubric of *perspective*. The most obvious is the *vantage point* from which a situation is conceptualized. Thus (7)(a), with *come*, implies that the speaker is in the attic, while *go* in (7)(b) implicates the opposite.

- (7) (a) Why don't you come up into the attic?
- (b) Why don't you go up into the attic?

Of course, speakers display great agility in recognizing other vantage points and mentally adopting them for expressive purposes. In (8)(a), for instance, the use of *come* conveys empathy and solidarity by indicating that the speaker is adopting the vantage point of the addressee.

- (8) (a) I'll come to your place Tuesday morning.
- (b) Ellen was writing furiously. Tomorrow was the deadline for the manuscript.

In (8)(b), the second sentence is readily interpreted as reflecting Ellen's vantage point rather than the speaker's. The incongruity of using *tomorrow* with a past-tense verb signals this transfer to the mental space representing Ellen's consciousness at the time of writing.

Another aspect of perspective is the overall *viewing arrangement* an expression presupposes. This is best illustrated by a classic example due to Len Talmy:

- (9) There's a cottage every now and then through the valley.

A cottage is not the sort of thing that goes in and out of existence, as suggested by the adverbial phrase *every now and then*. Nor is anything explicitly described as moving, as suggested by the path phrase *through the valley*. On the face of it, then, the sentence ought to be semantically and grammatically incoherent. Yet we immediately and easily understand it as making perfect sense. In contrast to the default of a static viewer reporting on a series of events, it presupposes the special arrangement in which a moving viewer describes what appears in the "viewing frame" (e.g., the window of a vehicle) during a journey. *Every now*

and then pertains to the frequency of a cottage being observed in that frame. Likewise, *through the valley* describes the path followed by the moving observer. Note, however, that the sentence makes no explicit reference to the mover, the journey, or the viewing activity. These notions have to be supplied by the conceptualizers (i.e., the speaker and the addressee), who create the basis for semantic and grammatical coherence by engaging in an active process of meaning construction.

A distinct but related phenomenon involves the conceptualizer traversing a static situation by means of “fictive” or “subjective” motion (Langacker 1986; Matsumoto 1996a, 1996b; Talmy 1996). The contrast in (10), for example, depends solely on the direction of *mental scanning*, as indicated by the prepositional phrases.

- (10) (a) An ugly scar runs all the way from his knee to his ankle.
(b) An ugly scar runs all the way from his ankle to his knee.

Mental scanning of this sort is by no means limited to spatial configurations but can be manifested in any conceptual domain:

- (11) (a) The prices on this model run from about \$18,000 all the way to \$27,000 depending on optional equipment.
(b) As average body size increases, the typical gestation period gets longer.

The sentences in (10) and (11) all describe situations that are locally stable with respect to the actual passage of time. The sense of movement and directionality reflects the order in which a range of options (spatial or otherwise) are mentally accessed by the conceptualizer in the process of building up to the full apprehension of a complex structure.

Lastly, our capacity for construal comprises various ways of rendering certain entities more *prominent* than others. Numerous types of prominence need to be distinguished for linguistic purposes. One kind of prominence attaches to elements that are new in relation to what has already been established in the discourse. Collectively called the *focus*, these elements stand out against the background of information said to be *old* or *given*. In English, focus is generally marked by unreduced stress (indicated here by small caps):

- (12) He said she was wearing a white blouse with black polka dots, but actually she was wearing a white SWEATER with black STRIPES.

Rather different is the inherent cognitive salience of certain kinds of entities and experiential domains. Examples include the salience of a whole relative to its parts, the special status of animate entities (especially humans) in relation to inanimate objects, that of physical entities as opposed to abstractions, and the psychological primacy of visual and spatial experience.

Among the linguistic manifestations of these salience asymmetries are the usual directions of metaphor and metonymy. It is well known, for instance, that abstract notions tend to be structured metaphorically in terms of source domains pertaining to physical experience, as in (6). Some cases of metonymy are given in (13). In (13)(a), *a whole turkey* refers metonymically to the turkey’s edible flesh; presumably the bones, feathers, and other sundry parts were not consumed.

- (13) (a) For Thanksgiving we ate a whole turkey.
 (b) I'm in the phone book.

The metonymic use of the pronoun *I* in (13)(b) illustrates the inherent salience of humans as well as physical entities. Under normal circumstances it would actually only be a graphic representation of the speaker's name, address, and telephone number that appears in the phone book.

Especially important for grammar are two kinds of prominence intuitively describable as involving the focusing of attention. The first, called *profiling*, characterizes expressions of any size or type. Within the full conceptualization it evokes, an expression directs attention to some particular substructure—its *profile*—as being the entity that it designates or refers to. An expression's profile is thus its “referent”, in a psychological (as opposed to a logical or philosophical) sense of that term.

The noun *lid*, for example, evokes the conception of a container together with a cover serving to close an opening in its top, as sketched in Figure 1(a). This entire conception is necessary, since a lid can be identified as such only in relation to a container and its covering/closing function. Yet the full conception is not per se the meaning of *lid*, since a lid is not equivalent to a container-cover assembly.

A crucial semantic property of *lid* is that, within this assembly, it specifies the cover in particular as being its referent. The cover is thus its profile, as shown in Figure 1(b). In the diagrammatic representations of cognitive grammar (which are heuristic rather than formal), profiling is indicated by heavy lines.

An expression can profile either a *thing* or a *relationship* (assuming abstract and broadly inclusive definitions of those terms—see Langacker 1987b). Consider the words *advise*, *advisor*, and *advisee*. As shown in Figure 2, they evoke the conception of two individuals engaging in a particular kind of verbally mediated social and psychological interaction. A dashed arrow represents this experiential relationship, its alignment indicating the primary direction of influence. Note that this entire conception figures in the meaning of all three expressions: a person does not qualify as an advisor or advisee except by virtue of participating in an interaction of this sort, nor can one conceive of the advising process without conceptualizing its participants. Since *advise*, *advisor*, and *advisee* have the same conceptual content, the semantic contrast among them resides in profiling, an aspect of construal. The verb *advise* profiles the relationship, including the participants essential to its conception. On the other hand, the nouns *advisor* and *advisee* profile only the respective participants, identified and distinguished by their role in the process.

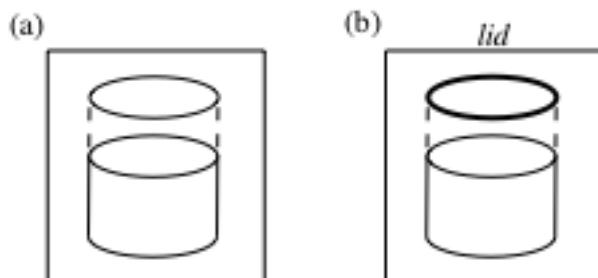


Figure 1. The effect of profiling.

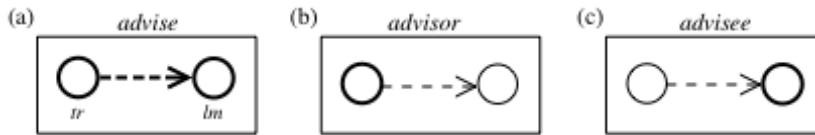


Figure 2. The profiling of a relationship vs. the profiling of its participants.

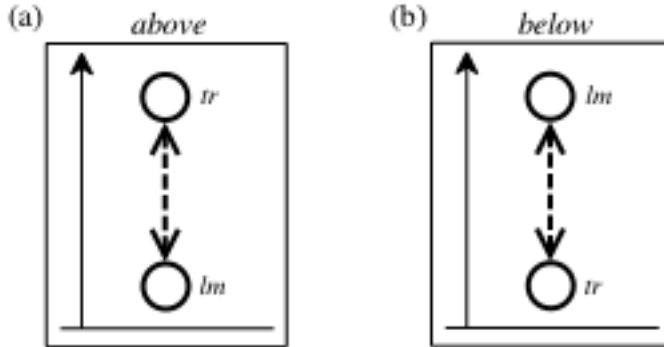


Figure 3. Expressions that differ in trajector/landmark alignment.

Such examples clearly demonstrate that an expression's meaning depends on both content and profiling. Yet these alone are not sufficient. We can see this from semantic oppositions like *above* vs. *below*, diagrammed in Figure 3. Both expressions designate a spatial relationship between two things (shown as circles) occupying different positions along the vertical axis. They thus evoke the same conceptual content. Moreover, they have the same profile (represented by the heavy dashed arrows)—referentially, an *above* relationship is also a *below* relationship. Some other factor must therefore be responsible for the contrast in meaning. This factor, a final dimension of construal, is the relative prominence accorded the participants in a profiled relationship. In a relational expression, there is usually a participant that stands out as the one being located or characterized, or whose activity is being followed. Called the *trajector* (*tr*), this entity can be described as the primary figure in the scene. Often a second participant, called the *landmark* (*lm*), stands out as a secondary figure. The semantic contrast between *above* and *below* resides in whether the upper participant is focused as trajector and the lower one as landmark, or conversely. If I say, for example, that *The knob is above the keyhole*, I am using the keyhole as a spatial landmark to specify the location of the knob. I do the opposite in saying that *The keyhole is below the knob*. Observe, however, that the notions trajector and landmark are not defined spatially, but as a matter of focal prominence, hence they are applicable to any kind of relationship. In Figure 2(a), for instance, the source and the target of advice are respectively identified as the trajector and landmark of *advise*.

2. LEXICON AND GRAMMAR

Both lexicon and grammar are claimed to be fully and properly describable as assemblies of symbolic structures. The term “symbolic” does not imply operations on strings of empty

markers (as when “symbolic processing” is contrasted with connectionist approaches). On the contrary, it refers to the semiological function of language and the symbolization of meanings by phonological sequences. In cognitive grammar, a *symbolic structure* is defined as consisting in the association between a *semantic structure* and a *phonological structure*—its semantic and phonological *poles*. Every lexical and grammatical element is thus attributed some kind of semantic and phonological value, whether specific or schematic.

Lexicon is defined in cognitive grammar as the set of fixed expressions in a language, regardless of their size or type. Each lexical item is an assembly of symbolic structures. A morpheme can be regarded as a minimal symbolic assembly, degenerate by virtue of having no symbolic substructures. The morpheme *door*, for example, can be given as [DOOR/door], where upper- and lower-case orthographic sequences respectively stand for semantic and phonological structures. The lexical unit *garage door* is more typical in being symbolically complex. As shown in Figure 4 (where dashed-line boxes delimit complex assemblies), it comprises two component symbolic structures, [GARAGE/garage] and [DOOR/door], together with the symbolic structure defined by the composite form and meaning of the overall expression: [GARAGE DOOR/garage door]. At a higher level of organization, this entire assembly combines with *opener*, itself complex, to form the lexical unit *garage door opener*. There is clearly no inherent upper limit on the symbolic complexity expressions can exhibit. A lexical item is “fixed” in the sense of being learned by individual speakers and conventional within a certain speech community. Since both are matters of degree, there is no strict boundary between lexical items and “novel” expressions. The latter, of course, are usually novel only in limited respects. How much is actually novel in the sentence *The garage door opener is broken*, for example? *Garage door opener* comes prepackaged as a lexical unit, and for those who have such a device, the full noun phrase *the garage door opener* is probably a familiar expression. Moreover, although the phrase *is broken* is not traditionally considered a lexical item, a typical speaker has used it on many occasions and may very well store it as a prefabricated unit. The truly novel aspect of the sentence may in fact be limited to combining *the garage door opener* and *is broken* as subject and predicate. More generally, the fluency of real-time speech may only be possible owing to the substantial proportion of boilerplate language and standard expressive schemes it employs.

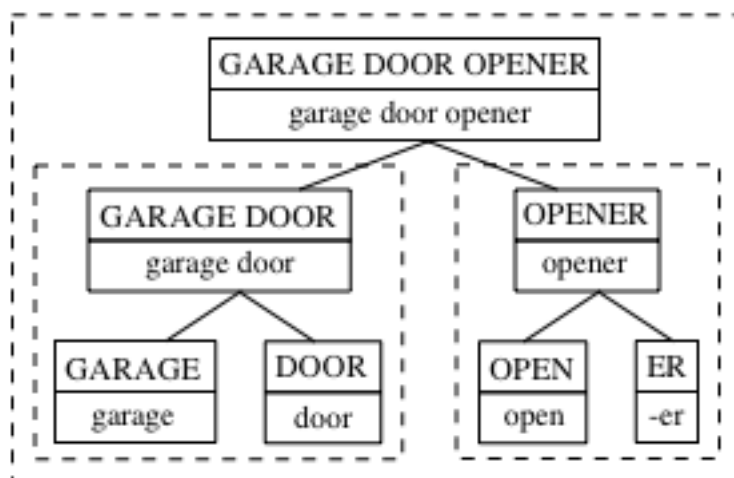


Figure 4. A lexical item with levels of symbolic complexity.

Both fixed and novel expressions consist of symbolic assemblies, of any potential size, at least partially constructed in accordance with regular grammatical patterns. Either are capable of diverging from such patterns, especially at the semantic pole, where an elaborate process of meaning construction may intervene between the meanings of component elements and the composite semantic value. In the case of a lexical item, deviations from regularity and strict compositionality are accepted as part of its linguistic characterization, since the entire assembly is familiar and conventional (by definition). With novel expressions, where this is not so (at least not yet), comparable deviations are normally regarded by linguists as involving ungrammaticality or facets of meaning that are extralinguistic (hence beyond the scope of semantics). But the difference is more apparent than real, hinging only on degree of entrenchment and conventionality. The standard doctrine that lexical items are idiosyncratic and semantically unpredictable, whereas novel expressions are regular and semantically compositional, does not stem from any empirical finding but rather from a tacit decision to consider only those facets of the latter that are already sanctioned by established convention.

Be it fixed or novel, a linguistic *expression* is a symbolic assembly whose composite structure is specified in enough detail—particularly at the phonological pole—that it can actually be uttered and understood. Linguists, however, are less interested in expressions per se than in the patterns and regularities they instantiate. In cognitive grammar, linguistic generalizations (the functional equivalent of “rules”) are simply *schemas* abstracted from occurring expressions. A schema is a template representing the coarse-grained commonality exhibited by a set of expressions with respect to some facet of their structure. It is reasonably supposed that schemas are *immanent* in their instantiating expressions, and emerge as cognitive entities by reinforcement of the structural properties they share at a certain level of abstraction. We have already noted degrees of schematization for semantic structures (e.g., in (1)). Moreover, since linguists are concerned with phonological structures as mental representations (not just as actual sounds), these too are susceptible to schematization. Schematized symbolic structures constitute grammar.

Cognitive grammar is highly restrictive and very down-to-earth in regard to the kinds of structures it allows in linguistic descriptions. On the one hand, it specifies that only semantic, phonological, and symbolic structures are permitted. Thus every linguistic element contributes directly to the semiological function of language by virtue of having some kind of semantic and/or phonological value. On the other hand, cognitive grammar imposes strong restrictions on the relation between linguistic structures and the primary data of occurring expressions. It specifies that the only structures validly posited are those which figure directly in the data (i.e., actual expressions and their parts), or which emerge from the data via the basic cognitive processes of abstraction (schematization) and categorization. To take a phonological example, particular segments such as [m], [n], and [ŋ] can be posited because they occur as parts of actual expressions. Permitted as an abstraction from these elements is the schematic segment [N], i.e., a nasal consonant unspecified as to place of articulation. It represents the generalization that nasal consonants occur in the language, and embodies the commonality that makes them a natural phonological class. Also permitted are the categorizing relationships identifying each nasal segment as an instance of that class: [[N] → [m]], [[N] → [n]], and [[N] → [ŋ]]. Similarly, we can posit the semantic structures [LID], [DOOR], and [CAP], permitted because they occur as the respective meanings of *lid*, *door*, and *cap*. Also allowed is the schematized conception they all instantiate, [COVER FOR OPENING], as well as categorizations such as [[COVER FOR OPENING] → [LID]].

The most striking and controversial claim of cognitive grammar is that these same few possibilities—applied to symbolic structures—are sufficient for a full and optimal account of lexicon, morphology, and syntax. Note first that lexical items are permitted in a linguistic description by virtue of being actual, recurring expressions. As shown in Figure 4, these include symbolic assemblies of any size, some of which function as components of others. Also permitted are schematizations of occurring expressions (not limited to lexical items). These schematic symbolic assemblies, potentially having any degree of complexity, embody the coarse-grained commonality inherent in sets of expressions. Such assemblies constitute grammatical structure, and their categorization of specific expressions (both fixed and novel) constitutes the structural characterization of those expressions.

Consider expressions like *jar lid*, *pot lid*, *box lid*, and *coffin lid*. Each is an assembly comprising two component symbolic structures (e.g., [JAR/jar] and [LID/lid]) together with the composite symbolic structure giving the meaning and form of the expression as a whole (e.g., [JAR LID/jar lid]). Although they vary in their frequency of occurrence and lexical status, they exhibit a structural parallelism that provides a basis for schematization. The resulting schema, which we can abbreviate as *CONTAINER lid*, represents a particular low-level pattern of forming nominal compounds. Higher-level abstractions are of course possible, such as the general schema for noun-noun compounds like *door knob*, *desk clerk*, *tomato juice*, *broom handle*, *luggage strap*, *movie star*, *tooth filling*, *cab driver*, *fire alarm*, *dust rag*, *computer virus*, etc. This highly schematic assembly—call it *THING THING*—is instantiated by *CONTAINER lid* and numerous other subschemas describing special cases of the general pattern. We can therefore posit schematic hierarchies, e.g., *THING THING* → *CONTAINER lid* → *jar lid*.

We must further recognize *extensions* from a basic pattern. Thus *eyelid* is an instance of *THING THING* but an extension vis-à-vis *CONTAINER lid*, for an eye is not a container: *CONTAINER lid* ---> *eyelid*. It is quite typical for the full description of a grammatical construction to involve a substantial number of constructional variants. These are characterized at different levels of specificity and linked by categorizing relationships to form a network, often centered on a prototype (Goldberg 1995; Janda 1990; Lakoff 1987: case study 3). The same can be said for the alternate senses of a polysemous lexical item, and indeed, for linguistic categories in general (Langacker 1987a: ch. 10, 1988).

3. GRAMMATICAL STRUCTURE

Why should there be such a thing as grammar? It would not exist were lexical units available to symbolize every conception one would want to express. However, lexical items form a limited set, whereas the conceptions we wish to encode linguistically are open-ended and indefinitely varied. We overcome this by resorting to complex expressions comprising multiple lexical elements. Each component element evokes some facet of the overall conception, a facet singled out precisely because it is susceptible to individual lexical encoding. Collectively, these individually symbolized conceptual “chunks” provide enough clues about the composite conception intended by the speaker that the addressee (especially in context) is able to reconstruct some approximation to it. But this reconstruction cannot

proceed effectively without some kind of systematic indication of how the conceptual chunks are supposed to fit together. The role of grammar is to provide this information.

We can start by examining a specific symbolic assembly, namely *jar lid*, sketched in Figure 5. The composite structure is shown at the top, the two component structures below. At the semantic pole, *lid* profiles the cover to a schematic container, *jar* profiles a specific container, and *jar lid* profiles the cover to a container of that type. (The pictorial representations are only mnemonic; they have to be understood as abbreviating multifaceted conceptualizations.) Phonologically, the components *jar* and *lid* are single words (W), the composite expression being a two-word sequence with accent on the first. The component and composite structures form an assembly by virtue of *correspondences*, represented diagrammatically by dotted lines. In particular, a semantic correspondence equates the profile of *jar* with the schematic container evoked by *lid*, while at the phonological pole *jar* is identified with the word directly preceding *lid*. When elements of the component structures correspond, they project to the same composite structure element. Correspondences can thus be regarded as instructions for “integrating” components to form the composite structure.

The specific symbolic assembly in Figure 5 instantiates schematized assemblies such as *CONTAINER lid* and *THING THING*, describing conventional compounding patterns at different levels of abstraction. The schema describing the general pattern is depicted in Figure 6. Phonologically, it indicates word order and the characteristic stress pattern of compounds without specifying any particular segmental content. At the semantic pole, the component and composite structures are characterized abstractly as profiling things (represented by circles).

The profile of the first component corresponds to a thing associated in some unspecified fashion with the profile of the second, which also prevails as the composite structure profile. The correspondences inherited from the sanctioning schema indicate how the conceptual “chunks” provided by the component structures are supposed to be combined in forming the composite semantic structure. Typically, however, the composite structure incorporates extracompositional properties and therefore has to be recognized as an entity in its own right.

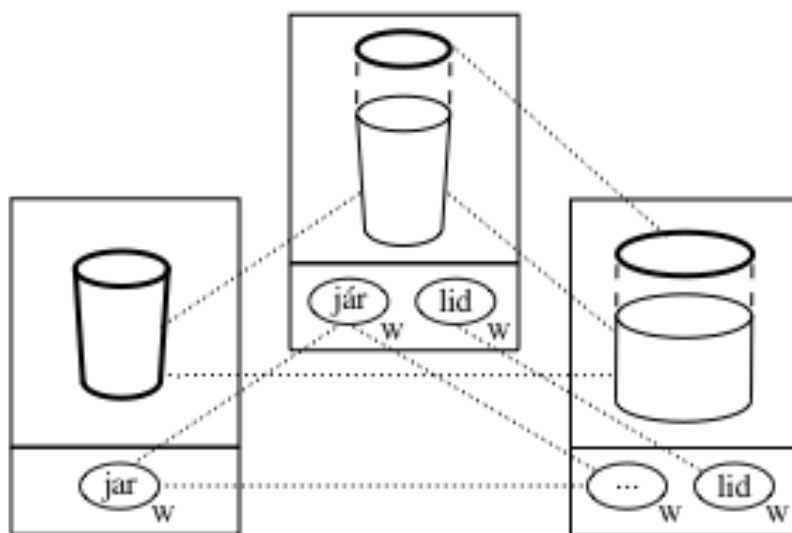


Figure 5. Details of a specific symbolic assembly.

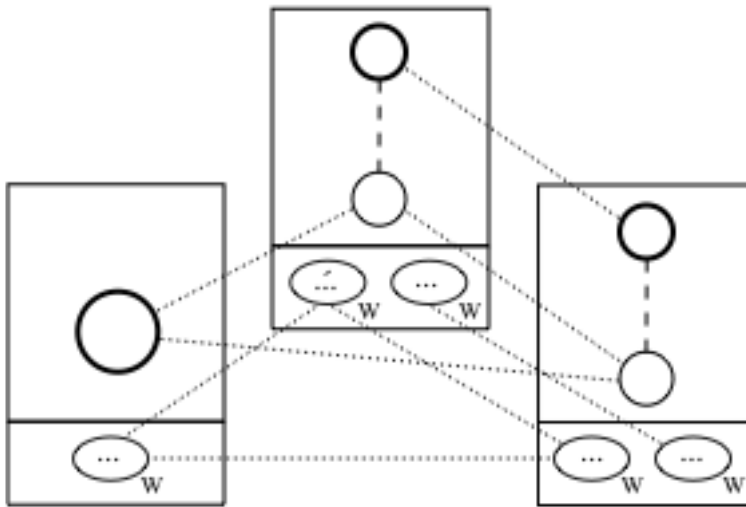


Figure 6. Details of a schematic symbolic assembly.

For instance, compounds like *lipstick* and *apple polisher* evoke conceptual “frames” not associated with either of their component elements taken individually (cf. Downing 1977; Ryder 1994). Neither *lip* nor *stick* by itself reliably evokes the cultural practice of females coloring their lips with a paint-like substance packaged in a stick-like shape. Although this cultural frame is necessary for the conceptual coherence of *lipstick*, it is neither mechanically determined nor fully constituted by the individual meanings of *lip* and *stick*, which explicitly encode only selected aspects of it. Semantics is only partially compositional: conventional patterns of composition (the semantic poles of schematic symbolic assemblies) are only one of the factors in the process of meaning construction that intervenes between component and composite conceptions in complex expressions. Compositional rules do not function in isolation, nor does their fully compositional “output” necessarily exist or have any independent cognitive status.

If the basic idea of symbolic assemblies is clear, it must next be asked whether they are able in principle to provide a full account of grammatical structure. Can they actually accommodate the various phenomena generally interpreted as demanding that grammar be treated autonomously? By way of partial demonstration that they can, let us briefly consider some fundamental problems: grammatical classes, grammatical markers, constituency, and distributional restrictions. An additional problem, how to characterize the grammatical relations subject and object, is the topic of section 5.

To this very day, standard linguistic doctrine holds that basic grammatical classes (noun, verb, adjective, etc.) are not semantically definable. The arguments are anything but conclusive, however, for they consider only the most simplistic semantic characterizations and completely ignore our ability to impose alternate construals on the same conceptual content (see, for instance, Jackendoff 1994: 68-69). It is argued, for example, that since not every noun names a physical object, and not every verb names an action, these classes cannot be defined on the basis of any meaning their members all share. The impossibility of a semantic definition is also argued on the grounds that expressions with the same meaning sometimes belong to different grammatical classes, e.g., *explode* (a verb) and *explosion* (a noun). But it should be evident that if all nouns have something in common semantically, or

all verbs, it must be more abstract than notions like ‘physical object’ and ‘action’ (which do however describe the category prototypes), and must be independent of any specific conceptual content. A viable conceptual characterization should instead be sought at the level of general cognitive abilities, in particular our capacity to conceive of the same situation in alternate ways. Category membership does not reflect conceptual content so much as the construal imposed on it.

What sort of cognitive abilities might be invoked in a conceptual characterization of the noun class? One is profiling. As we saw in Figure 2, the words *advise*, *advisor*, and *advisee* have basically the same conceptual content, the semantic contrast residing in their choice of profile. It is in fact the nature of an expression’s profile—not its overall content—that determines its grammatical class. *Advise* is thus a verb because it profiles a certain kind of relationship, whereas *advisor* and *advisee* are nouns because they profile “things” (identified by their role as participants in that relationship). The claim, then, is that a noun profiles a *thing*, in an abstract and broadly inclusive sense of that term. This is the conceptual property that all nouns have in common, and they are nouns precisely because they have this property.

But what is a “thing”? My working hypothesis is that a thing is the product of two fundamental and ubiquitous cognitive phenomena. The first is *grouping*, whereby entities are singled out and conceived in relation to one another, to the exclusion of others. Most familiar are the gestaltist principles of grouping by contiguity and similarity. In viewing (14)(a) we can hardly avoid forming groups of two and three x’s on the basis of contiguity, while in (14)(b) similarity affords a basis for singling out certain entities (the x’s) which can then be grouped by proximity.

- (14) (a) x x x x x
 (b) - - - x - x - x - x - - - - - x - x - x - x - - - - - x - x - x - x - - -

We can also recognize more abstract bases for grouping. For instance, the members of an orchestra are mentally grouped because they are conceived as interacting to collectively fulfill a certain function. A number of stars are grouped to form a constellation because they are conceived as points in the outline of a schematic image. The second relevant phenomenon, call it *reification*, is the manipulation of a group as a unitary entity for higher-level cognitive purposes. In (14)(b), for example, I reify the groups of x’s when I count them, observe that all three are the same, note that they form a straight line, etc. I reify an orchestra when I compare it to another in size or quality, or when I think of it as joining with others to form an orchestra association (a higher-level group).

A “thing” is thus defined as any product of grouping and reification, and a noun is characterized as an expression that profiles a thing. Large numbers of nouns are straightforwardly describable in this manner: *group*, *team*, *club*, *stack*, *pile*, *alphabet*, *archipelago*, *swarm*, *herd*, *jigsaw puzzle*, *chess set*, *lexicon*, *bouquet*, *collection*, *orchard*, *chord*, *squad*, *galaxy*, and so on indefinitely. Each such noun designates a set of constitutive entities that obviously are grouped and conceptually wielded as a single unit for linguistic and other purposes. I suggest that the same description applies to physical objects, even those whose constitutive entities are nothing more than arbitrarily delimited “splotches” of material substance continuously distributed throughout a certain expanse of space. The splotches constituting a *rock*, for example, are neither individuated nor consciously recognized, yet the very apprehension of their continuous extensionality effects their grouping to yield the

conception of a unitary object. The reason physical objects are prototypical for nouns is that the grouping and reification of their constitutive entities is so basic and automatic that any awareness of them requires subsequent, higher-level analysis. I have argued elsewhere (Langacker 1987b, 1991: ch. 1) that mass nouns, abstract nouns, and others also conform to this general description.

I have no definite proof for this conceptual characterization of nouns. If basically correct, it will nonetheless have to be refined, properly formulated, and empirically tested from the psychological standpoint by those with proper expertise. It is merely offered as a coherent proposal with some claim to linguistic adequacy and cognitive plausibility. Even so, by indicating what a viable conceptual description of nouns might look like, it underscores the simplistic nature of standard arguments for the impossibility of a semantic definition. I personally find it hard to imagine that fundamental and universal categories like noun and verb would not have a conceptual basis (cf. Gentner 1981, 1982; Kellogg 1994, 1996). As a general matter, I believe that such categories reflect inborn cognitive abilities that are initially manifested in the category prototype and become more apparent when extended to other kinds of circumstances. (This is not in principle incompatible with an account based on metaphor, e.g., the notion that nominal referents are metaphorically construed as physical objects.)

The prototype for verbs is an action, i.e., an event producing observable change carried out by a volitional agent. The more schematic conception which verbs all share, I suggest, is that of a relationship mentally scanned sequentially—instant by instant—in its evolution through time. I refer to this as a *process*. Every verb is thus said to profile a process, just as every noun profiles a thing. Other basic classes, such as prepositions and adjectives, are characterized as profiling different sorts of relationships viewed “holistically”, in the sense that their evolution through time is not in focus. A preposition like *above*, for instance, profiles a non-processual relationship with a thing as its landmark (Figure 3); while this relationship is likely to endure through time, its temporal evolution is not essential to its description or identification (it can be identified in a configuration viewed only instantaneously). An adjective profiles a relationship with a thing as trajector but no salient landmark. The adjective *square*, for example, profiles a complex relationship—involving length of sides, parallelism, perpendicularity, etc.—holding among various facets of its trajector. (As a noun, *square* profiles a thing consisting of connected line segments whose configuration instantiates the relationship profiled by the adjective.) Participles and infinitives derive from verbs, hence they evoke the conception of a process, but in one way or another they construe it holistically to form a higher-level conception that is non-processual. For instance, one kind of past participle restricts the profile of a change-of-state verb to the final state resulting from the change. Thus, whereas the verb *melt* profiles the process of a solid (its trajector) gradually becoming liquid, the participle *melted* profiles just the latter situation. By virtue of profiling a single-participant, non-processual relationship, such participles actually qualify as adjectives and behave that way grammatically (e.g., *melted ice cube*; *The ice cube is finally melted*).

Standard linguistic doctrine notwithstanding, I see nothing problematic or inherently implausible about the notion that the members of a basic grammatical class all share an abstract commonality. It is thus proposed that every noun instantiates the symbolic schema [THING/...] (i.e., it profiles a thing, but need not have any particular phonological properties). Likewise, every verb instantiates the schema [PROCESS/...]. While class membership is

usually taken as demonstrating the need for irreducible grammatical primitives, it is coherently and more naturally seen as residing in categorizing relationships between specific and schematic symbolic structures: [[THING/...] → [EXPLOSION/explosion]]; [[PROCESS/...] → [EXPLODE/explode]]. It needs to be emphasized that these characterizations do not invoke any specific conceptual content. The schematic conception immanent in all nouns, or in all verbs, is primarily a matter of construal: a noun profiles a product of grouping and reification, while a verb profiles a relationship whose temporal evolution is scanned sequentially. These alternate modes of construal can perfectly well be applied to the same conceptual content, resulting in a difference in grammatical class. If *explode* and *explosion* evoke the same basic conception, they nonetheless impose distinct construals on it. As a verb, *explode* construes the event as a dynamic process and simply tracks its occurrence through time. On the other hand, the noun *explosion* profiles an abstract “thing” created by the reification of such a process. Its constitutive entities are the successive phases of the process (i.e., the situations obtaining at each successive point in time), and the very act of scanning through them sequentially provides the basis for their grouping. Hence *explosion* designates a reified event consisting of one instance of the process *explode*.

As this example indicates, the semantic import of grammar is largely a matter of the construal it imposes on the content supplied by lexical elements (cf. Talmy 1988). The reason why the meaningfulness of grammar is not generally recognized is that semantics has not generally acknowledged the critical role of construal. Especially in the formalist tradition, linguists have consequently analyzed many elements as “purely grammatical” markers whose meaning is ignored and often explicitly denied. I have argued, to the contrary, that all grammatical markers have at least schematic conceptual import, and have proposed and justified particular meanings for a substantial number of representative instances (e.g., Langacker 1990, 1991, 1992). Semantically, such markers are comparable to the schemas describing grammatical classes. As overtly realized grammatical markers, however, they differ from class schemas by virtue of being phonologically specific.

Consider the auxiliary verb *do*, which occurs with negation (*I do not see them*), in questions (*Did you wash it?*), and for emphasis in statements (*I DO love you!*). It is often viewed as meaningless, being inserted just for grammatical purposes (e.g., in Chomsky 1957). However, the fact that *do* serves a grammatical function does not entail that it has no meaning (cf. Reid 1991). It is cogently analyzed as a maximally schematic verb, i.e., one whose semantic pole is equivalent to the verb-class schema despite its phonological specificity: [PROCESS/do]. This accounts for its taking verbal inflection, and also for its use as a kind of verbal anaphor: *Can you fix it? I already did*. One reason *do* appears to have no meaning is that it refers schematically to the same process that the lexical verb it combines with describes in more specific terms, hence it contributes no additional content. Yet semantic overlap is characteristic of all grammatical constructions (see Figure 6), and full inclusion is just an expected limiting case.

Most derivational and inflectional morphemes are reasonably described as being schematic for the class they derive, their semantic contribution residing in the construal they impose on the stems they combine with, especially in regard to profiling. For example, the derivational morphemes *-er* and *-ee* profile things characterized only by their agent- or patient-like role in a schematically specified process; they impose this nominal profile on the specific process designated by the verb stem they attach to. I would thus describe *-er* and *-ee* as schematic agentive and patientive nouns, which forms like *advisor* and *advisee*

respectively instantiate. By the same token, the nominalizing morpheme *-ion* (as in *explosion*) profiles a thing characterized as the reification of a schematic process, and the past participial morpheme *-ed* (as in *melted*) profiles the state resulting from a schematic change-of-state process. Of course, these same elements have alternate semantic values—just like other lexical items, grammatical markers are often polysemous. (For the polysemy of *-er*, see Ryder 1991.)

We have so far discussed how certain basic grammatical phenomena—namely rules, classes, and markers—are in principle describable in terms of symbolic assemblies. Other phenomena commonly taken as supporting the autonomy of grammar include constituency as well as the problem of “distribution” or “structure dependency”, i.e., arbitrary restrictions on the structural contexts in which elements are allowed to occur. In fact, however, the symbolic view of grammar readily handles them both.

To represent constituency, generative grammar posits syntactic phrase trees in which lexical items are “inserted” and function as terminal nodes. These tree structures are thought of as purely grammatical entities essential to syntactic description. While they may play a role in semantic and phonological interpretation, the trees themselves draw on syntactic primitives and have no intrinsic semantic or phonological value. Three kinds of information are represented in these phrase trees: constituency, grammatical category (given by node labels), and linear order. All of these are clearly important for grammar. Only the status of phrase trees as autonomous syntactic objects is being called into question.

Constituency per se is hardly unique to grammar. It is just a matter of component elements being incorporated as facets of more complex structures at successively higher levels of organization. As such, it is evident in virtually every domain of experience: in motor experience, where component routines are coordinated into higher-level routines (as in learning to type); in perception, as in (14)(b), where *x*’s cluster into groups of four, which can then be perceived as forming a cluster of three such groups; and so on. Constituency emerges in symbolic assemblies when a composite symbolic structure at a given level of organization functions in turn as a component structure at a higher level. For example, we see in Figure 4 that [GARAGE DOOR/garage door] and [OPENER/opener], each a composite structure with respect to its morphemic components, are themselves component structures with respect to the overall composite structure [GARAGE DOOR OPENER/garage door opener]. To the extent that they have this kind of hierarchical arrangement, symbolic assemblies are reasonably depicted as trees in the manner of Figure 4. These trees are quite different from the phrase trees of generative grammar, however. Most importantly, every “node” is symbolic, having both a semantic and a phonological value, whereas the nodes of a generative phrase tree have neither.

Another difference is that the components of a symbolic assembly are not linearly ordered with respect to one another (hence assemblies like Figure 4 are more like mobiles than trees). Linear ordering is actually the temporal ordering of speech. While temporal ordering is exploited for the symbolization of grammatical relationships, it is properly regarded as a dimension of phonological structure. Temporal sequencing is therefore specified internally to every component and composite symbolic structure, as an inherent aspect of its phonological characterization (e.g., the phonological pole of [GARAGE DOOR/garage door] specifies that *garage* directly precedes *door* in the temporal sequence). In similar fashion, grammatical category—which phrase trees indicate by means of node labels—is properly regarded as an inherent aspect of a symbolic structure’s semantic

characterization. In Figure 5, for instance, the component and composite structures of *jar lid* are all classed as nouns because each profiles a thing (the noun-class schema is immanent in each of them).

We see, then, that the kinds of information represented in phrase trees are all available in symbolic assemblies as different aspects of their intrinsic organization. Interpreted as distinct and autonomous syntactic objects, phrase trees are therefore held to be unnecessary theoretical artifacts, a product of linguistic gerrymandering. Moreover, cognitive grammar views constituency as being less essential than does generative theory, and also more fluid and variable (Langacker 1995a, 1997a). Phenomena for which syntactic phrase trees per se have been considered indispensable (e.g., the definition of subject and object, discussed in section 5) are claimed to be better analyzed in other ways.

Turning now to distributional problems, I must first offer a point of clarification concerning grammatical classes. The claim that such classes are susceptible to schematic semantic descriptions valid for all members is specifically intended for basic and universal classes like noun and verb, for their major subclasses (e.g., count vs. mass noun), and for certain other “part-of-speech”-type classes (such as adjectives, adpositions, and particular kinds of participles). It is definitely not asserted that every class a linguist might validly posit is definable in this manner. Such a claim would obviously be untenable for many distributional classes, consisting of the lexical items conventionally allowed to participate in a given syntactic, morphological, or even phonological pattern. Even when a construction has a semantic basis, and the lexical items entering into it exhibit some degree of semantic coherence (as in the English passive), the exact inventory is often conventionally determined and less than fully predictable. The membership of some classes (e.g., the class of verbs taking a particular irregular past-tense form) may be totally arbitrary.

Because the membership of certain classes cannot be predicted, it has to be specifically learned by speakers and explicitly described by linguists. This does not by itself establish the autonomy of grammar, except in the weakest sense (acknowledged by every linguist) that functional considerations fail to fully and uniquely determine every detail of language structure—the specific patterns and distributions of a language are shaped by convention and acquired through social interaction. Whether distributional restrictions support any stronger form of autonomy depends on what kind of apparatus is needed to describe them. There is in fact every reason to believe that only symbolic assemblies are necessary.

Complex expressions consist of symbolic assemblies, and the conventional patterns they instantiate consist of schematizations of such assemblies (recall Figures 5 and 6). Depending on the supporting data, the process of schematization can be carried to any degree, and to different degrees for different facets of a construction. This produces hierarchies of schematized assemblies, illustrated by our previous example *THING THING* → *CONTAINER lid* → *jar lid* (where *THING THING* represents a very general pattern for nominal compounds, and *CONTAINER lid* is the low-level pattern abstracted from forms like *jar lid*, *pot lid*, *box lid*, and *coffin lid*). In view of the many possible levels and dimensions of schematization, as well as the many kinds of similarity exhibited by overlapping sets of complex expressions, we can reasonably envisage the emergence of vast, intersecting networks of schemas representing patterns with varying degrees of generality and salience. The full characterization of what linguists might consider to be a unified construction—e.g., nominal compounding, passive voice, or past tense formation—requires a substantial network in which certain schemas are categorized as instantiations or as extensions vis-à-vis others

that are more abstract or more prototypical. Despite its complexity (which I believe to be both linguistically necessary and cognitively realistic), such a characterization does not imply a loss of generality: any valid generalization is captured by a schema at the appropriate level of abstraction.

These networks are the locus of distributional knowledge. Even in cases where a high-level schema presumably emerges (e.g., *THING THING*), a network of instantiating structures specifies which regions within the large space of possibilities it defines are in fact conventionally exploited. Among these structures, capturing local generalizations, are low-level schemas pertaining to narrowly defined classes of elements. The lowest-level structures in such a network are schemas incorporating specific lexical items as components (e.g., *CONTAINER lid*) and even actual expressions learned as units (*jar lid*). Symbolic assemblies that incorporate specific lexical items embody a speaker's knowledge of their distributional idiosyncrasies. Consider the English ditransitive construction, where a verb takes two post-verbal nominal complements:

- (15) She {gave/lent/bequeathed/*transferred} him a substantial amount of money.

Not every verb potentially occurring in this construction actually does so, and while various partial regularities are captured by a network of low-level schemas (Goldberg 1992, 1995), a certain amount of lexical specification is also necessary. It is provided by subschemas that mention particular verb stems.

For example, the information that *bequeath* occurs in this construction resides in a subschema which incorporates this specific verb but is schematic in regard to the nominal complements (there is no such schema for *transfer*). Similarly, the information that *break* follows a certain minor pattern in forming its past tense resides in knowledge of the specific form *broke*, which instantiates that pattern.

Since language is learned through usage, it ought not be surprising that the preponderance of linguistic knowledge consists of specific expressions and low-level patterns, many of which incorporate particular lexical items. This is not to deny the existence and importance of general, productive patterns represented by high-level schemas. I would however suggest that fully general patterns constitute a distinct minority, that lower-level structures provide critical information and do much if not most of the work in speaking and understanding.

Attempts to impose a strict boundary between structural regularity and idiosyncrasy—attributing them to distinct modules or processing systems (Chomsky 1965; Pinker and Prince 1991)—are, I believe, both linguistically untenable and psychologically dubious. Instead I envisage a dynamic, interactive process whereby structures at all levels of abstraction compete for activation and the privilege of being invoked in producing and understanding utterances (cf. Elman and McClelland 1984; Langacker 1988, 2000). Particular high-level schemas may be so entrenched and accessible (relative to alternative patterns or to subschemas) that they normally win the competition and prevail as general or default-case patterns.

But even in such circumstances, specific instantiating expressions can be learned and accessed as units if they occur with sufficient frequency (Stemberger and MacWhinney 1988). And in general, lower-level structures have a built-in competitive advantage, since their greater specificity enables them to match a potential target in many more respects, each contributing to their activation.

4. SUBJECT AND OBJECT

Though radical in relation to current dogma, cognitive grammar is not at all fanciful. It is highly conservative in what it assumes about cognition and what it allows the analyst to posit in describing a language. It has been successfully applied to myriad problems in diverse languages (see, for example, Achard 1993; Casad 1982; Cook 1988; Janda 1993; Maldonado 1992; Manney 2000; Rice 1987; Rubba 1993; Smith 1993; Tuggy 1988). Moreover, detailed accounts have been given of representative phenomena that have figured prominently in the theoretical literature and have often been cited in support of autonomous syntax. In particular, I would argue that the cognitive linguistic descriptions of English passives, “raising” constructions, and pronoun-antecedent relationships are more adequate and more revelatory than generative analyses (Langacker 1982, 1995b; van Hoek 1995, 1997). One basic problem for a symbolic account of grammar is to characterize the notions *subject* and *object*. There are few topics on which linguistic theorists exhibit such a striking lack of consensus. About the only thing virtually all of them agree on is that a conceptual definition valid for all subjects or all objects is just not feasible. I believe that such a characterization is indeed possible. It must however be suitably abstract, as well as psychologically plausible. As in the case of grammatical classes, we must seek a broadly applicable description at the level of general cognitive abilities initially manifested in the prototype. I propose that subject and object status ultimately reduces to a kind of focal prominence conferred on participants in a profiled relationship. In particular, subject and object nominals are identified as respectively specifying the *trajector* and the *landmark* of a profiled relationship. These latter notions have in turn been described in various ways (Langacker 1990: ch. 9, 1991: 7.3, 1997b). I have characterized a trajector as (i) the *primary figure* in a profiled relationship, (ii) the element one is *primarily* concerned with describing or locating (a clause-internal “topic”), and (iii) the *initial focus of attention* (“starting point”) in a chain representing the order in which elements are accessed in building up to a full conception of the profiled relation. The characterization of a landmark is obtained by replacing the words *primary*, *primarily*, and *initial* with *secondary*, *secondarily*, and *second* (i.e., changing “1” to “2”). I conceive of points (i)-(iii) as being complementary and mutually compatible. In referring to trajector and landmark as *primary* and *secondary focal participants*, I intend to subsume all three.

Stated more precisely, the proposal is as follows: a *subject* (or *object*), at a given level of organization, is a nominal element which elaborates the trajector (or landmark) of the relationship profiled at that level. A nominal element is one that profiles a thing, and it elaborates a trajector or landmark by virtue of its profile corresponding to it. Consider the sentence *Alice admires Bill*, whose semantic pole (ignoring tense) is sketched in Figure 7. *Admire(s)* profiles a relationship of mental experience (indicated by a dashed arrow). Its trajector is the experiencer, and its landmark is the target of experience. *Alice* and *Bill* are nominal expressions, for they profile “things”, whose semantic specifications are abbreviated as “A” and “B”. Following usual assumptions regarding constituency, *admires* and *Bill* combine, at one level of organization, to form the composite structure *admires Bill*. At a higher level of organization, *admires Bill* combines with *Alice* to give the overall composite structure *Alice admires Bill*. Observe that the same experiential process is profiled at three levels: by the verb *admire(s)*, by the “verb phrase” *admires Bill*, and by the full clause *Alice admires Bill*. Tracing along correspondence lines (both vertical and horizontal) reveals that

Alice elaborates the trajector of this process at all three levels, and *Bill* the landmark. Thus *Alice* is identified as the subject, and *Bill* the object, with respect to the verb, the verb phrase, and the clause. This proposal exemplifies the working strategy noted at the outset, namely to seek characterizations that are simultaneously (i) reasonable from the psychological standpoint, (ii) well motivated in purely semantic terms, and (iii) optimal as a basis for analyzing grammar. Let us first consider semantic motivation. I have already indicated that the trajector/landmark distinction is necessary just to describe the meanings of relational expressions. An adequate description has to capture the semantic contrast between pairs like *above* and *below* (also *before* vs. *after*, *in front of* vs. *in back of*, *precede* vs. *follow*, etc.), which have the same conceptual content and profile the same relationship (Figure 3). Constructs like trajector and landmark, pertaining to the salience and accessibility of the relational participants, would seem to offer the only possible basis for distinguishing them. The claim, then, is that a sentence like (16)(a) is primarily concerned with locating the alarm button, and evokes the light switch as a landmark for doing so, whereas (16)(b) shows the opposite alignment.

- (16) (a) The alarm button is just above the light switch.
 (b) The light switch is just below the alarm button.

Discourse considerations provide supporting evidence. Observe that only (16)(a) is natural in response to the question *Where is the alarm button?*, while (16)(b) responds to *Where is the light switch?*. This illustrates Chafe's discourse-based characterization of a subject as "a starting point to which other information is added" (1994: 92). The question *Where is X?* establishes X in the discourse as the obvious point of departure for the answer.

What about cognitive plausibility? We can start by noting that figure/ground organization is a well-established perceptual phenomenon and that the figure in a scene is the first element to catch our attention. Moreover, I presume there is nothing inherently implausible about supposing that figure/ground organization (or something directly analogous to it) is also prevalent at higher levels of conceptualization. The trajector/landmark asymmetry in relational expressions does in fact exhibit certain tendencies suggesting a strong affinity to figure/ground organization. Talmy (1978) has pointed out that factors contributing to the choice of perceptual figure—notably compactness and mobility—also tend to be associated with the elements I would identify as relational trajectors. For instance, (17)(a) is far more natural than (17)(b), given usual assumptions about the relative size and mobility of the participants.

- (17) (a) The bicycle is next to the church.
 (b) ?*The church is next to the bicycle.

There are of course many cases where opposite trajector/landmark alignments are both permitted, e.g., the active/passive alternation, as in (18), or lexical alternations like *above/below*, *in front of/in back of*, *before/after*, etc.

- (18) (a) Iraq invaded Kuwait.
 (b) Kuwait was invaded by Iraq.

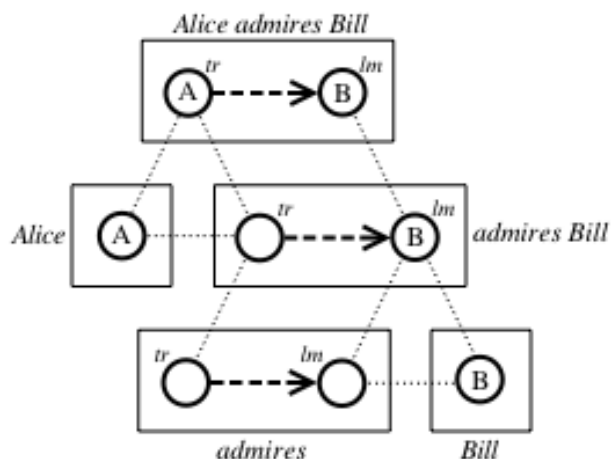


Figure 7. A symbolic assembly illustrating the definition of subject and object.

Intuitively I regard these alternations as being quite comparable to the phenomenon of figure/ground reversal. Partial support for this comparison derives from the fact that in both cases there is usually a preference for one of the alternate alignments. In (14)(b), for example, it is easier to perceive groups of x's standing out as figure against a background of dashes than to do the opposite. Likewise, an active is unmarked relative to its corresponding passive, and forms like *above*, *in front of*, and *before* are the default members of their respective pairs. Furthermore, the neutral member of these oppositions is usually the one that confers trajector status on the entity which is most easily chosen as perceptual figure. As the terms themselves indicate, an “active”-clause subject tends to be more mobile and energetic than its “passive”-clause counterpart. Also, if X is *above* or *in front of* Y it is X that we are more likely to see, and if X comes *before* Y it is X that we will first encounter.

A variety of experimental findings are interpretable as lending plausibility to the proposed characterization of grammatical subjects. I hasten to add that the interpretation is in each case my own, and that the investigators were not specifically concerned with subjects per se. To show the relevance of this work, I need to say just a word about the broader theoretical context in which my proposal is situated (Langacker 1993b, 1997b, 2003). Myriad linguistic phenomena call out for description in terms of conceptualizations that are *dynamic* in the sense that the temporal axis—how they unfold through processing time—is critical to their value. They involve successive foci of attention, each occurring in a context evoked by its predecessor.

In a *focus chain* of this sort, directing attention to a given element results in the conceptualizer orienting to a new context within which the next focus can be detected. Equivalently, I will speak of a *reference point* providing mental access to a set of potential targets, which collectively constitute its *dominion*. The initial focus (or reference point) in such a chain can be called a *starting point*. We find clear examples of reference point chains in certain possessive and locative constructions:

- (19) (a) Tom's mother's cousin's friend's lover's psychiatrist
- (b) Your keys are downstairs, in the study, on the desk, under some papers.

In (19)(a), a focus chain leads from Tom, the starting point, to a particular psychiatrist, the ultimate target. Each possessor serves in turn as a reference point, in which capacity it evokes a dominion containing the possessed, which can then be put in focus as the next reference point. Similarly, the successive locatives in (19)(b) direct attention to smaller and smaller spatial areas, each of which contains the next and thus affords mental access to it.

It needs to be emphasized that the conceptualizations associated with most expressions are complex and multifaceted, so that no single ordering accounts for all their properties. There are numerous kinds of focus chains, which can co-exist without necessarily being co-aligned, each pertaining to a different level or dimension of linguistic organization. Besides possession and location, exemplified in (19), natural orderings are given by such factors as the temporal sequence of events, the transmission of force from participant to participant along a causal chain, and successive access to a series of minds, each conceiving of the next (e.g., *Fred believes Sally suspects Bob knows Martha likes him*). Along the axis of speech time, the words in a sentence constitute a focus chain which can correlate with any of the others and thereby heighten its salience. With respect to the tracking of referents in a discourse, salient nominals emerge as reference points, establishing structural dominions within which compatible pronouns are freely interpretable as being coreferential to them. A “topic” (at a given level of organization) is a reference point anchoring a realm of knowledge or experience (its dominion) into which one or a series of propositions is to be integrated.

In the context of this general scheme, it is reasonable to view the trajector/landmark asymmetry as a special kind of focus chain. Trajector and landmark would then be characterized as initial and second focus in a natural ordering pertaining to relational participants. Specifically, since the conception of a relationship presupposes the conception of its participants, we can describe a trajector (and landmark) as the first (and optionally the second) participant saliently evoked in building up to the full conceptualization of a profiled relation. If I conceive of a person, for example, I can use this as a starting point to anchor the more elaborate conception of a person engaging in some activity—such as motion, perception, or the exertion of force—which may well involve its interaction with a second focused participant. Verbs impose this kind of asymmetry as an inherent aspect of their lexical semantic value. At the lexical level (where events are categorized into conventionally recognized types), the more active participant is usually chosen as starting point. At higher levels of grammatical organization, where discourse considerations come into play, other options are available. For instance, the passive construction allows us to evoke a non-active participant as starting point, using it to anchor the more elaborate conception of an event in which it has a patient-like role.

Turning now to the experimental findings, MacWhinney (1977) presents a variety of evidence (from experimental tasks involving rating, elicited production, problem solving, verification, production, and recall) that “the speaker uses the first element in the English sentence as a starting point for the organization of the sentence as a whole”, where a starting point serves as basis for “the ACTIVE CONSTRUCTION OF AN ACTIVE PERSPECTIVE” (152). Similarly, Gernsbacher and Hargreaves (1992) explain numerous experimental results, notably pertaining to the “privilege” of initial elements, in terms of the “structure building framework”. They suggest that building coherent mental representations first involves “laying a foundation”, and that subsequent information which “coheres or relates to previous information is mapped onto the developing structure” (87). Moreover, recent experimental work points to agents being accessed more rapidly than patients: “...When a prototypical

causal relation can be perceived directly and when the participants in the event maintain their role for an extended time interval, agent information is accessed more rapidly than patient information. The prominence of the agent over the patient in grammatical phenomena is paralleled by a privileged status of the agent at the level of perceptual processing. It is tempting to speculate that the observation that the agent is a prototypical subject and that the subject in canonical sentences surfaces before the object, can be traced back to the fact that, during visual event perception, agent information is available earlier for further processing than patient information” (Verfaillie and Daems 1996: 144).

While these formulations do not refer specifically to grammatical subjects, they help render plausible the general type of characterization proposed. In most of the cases cited by MacWhinney and by Gernsbacher and Hargreaves, the initial element was in fact the subject. We can further note the cross-linguistic tendency for agents to be chosen as subjects, and for subjects to precede objects in basic word order. These studies strongly suggest that order of access is important in language processing, and that the conception evoked by a clause is actively constructed on the foundation provided by a starting point. In the overall scheme outlined above, a complex expression comprises numerous natural orderings pertaining to different levels and dimensions of organization.

Hence there ought to be some proclivity for their starting points to coincide, which we do in fact observe in canonical clauses like *He broke it*, where the initial word is also the subject, the agent, and the topic. By the same token, experimental findings indicating that agents are accessed quickly and that initial elements provide the starting point for structure building lend some credence to the characterization of subjects in such terms.

If the studies just described offer circumstantial evidence for the proposed characterization of subjects, some experimental results reported by Tomlin (1995) are perhaps the equivalent of a smoking gun (see also Forrest 1996). Tomlin’s basic hypothesis—fully compatible with my proposal—was that, at the time of utterance formulation, the speaker codes the referent currently in focal attention as the syntactic subject of the sentence.

He tested it by controlling the attention of experimental subjects as they observed a two-participant event, which they then encoded verbally with either an active or a passive sentence. The event consisted of one fish swallowing another, and attention was directed to one of the fish (by means of an arrow flashed on the screen) just 150 ms. prior to the swallowing—too brief an interval for attention to wander in between. Tomlin thus predicted that attention focused on the swallowing fish would lead to the production of an active sentence (e.g., *The red fish swallowed the blue fish*), while attention focused on the swallowee would lead to production of a passive (*The blue fish was swallowed by the red fish*). This proved to be the case nearly 100% of the time. Tomlin’s results are of course insufficient to conclusively establish the proposed characterization of subjects. They do not, for example, clearly distinguish between grammatical subject and initial clausal element. They do however enhance the plausibility of claiming that subjecthood is ultimately a matter of focal prominence, interpretable as order of access to relational participants. Pointing in the same direction are numerous grammatical considerations, some of which will now be briefly summarized.

An initial point is that the characterization is sufficiently abstract, hence flexible enough in application, to handle the full range of subjects and objects. Depending on what relationship is profiled, for example, the subject can occupy any position in a causal chain (cf. Fillmore 1968):

- | | | |
|------|--|------------------------|
| (20) | (a) She opened the door with this key. | [subject = agent] |
| | (b) This key opened the door. | [subject = instrument] |
| | (c) The door opened. | [subject = patient] |

The characterization accommodates the subject in passives, and various other “special” constructions, without requiring derivation from hypothetical underlying structures. It also accounts directly for a striking asymmetry: a landmark implies a trajector, but not conversely. In (20)(c), for example, the single participant has an object-like semantic role but is nonetheless realized as the grammatical subject. This is a consequence of the trajector and landmark being the *initial* and *second* focal elements: something can be second only if something else comes first. Note that this asymmetry pertains specifically to trajector/landmark alignment—“argument structure”—irrespective of whether the focal elements are actually spelled out by overt nominal expressions. For instance, an imperative like *Shut the door!* has both a trajector (understood as the addressee) and a landmark, even though only the latter is overtly realized. The proposed characterization of subject and object makes no reference to grammatical constituency, but rather to correspondences, profiling, and focal prominence: a nominal expression qualifies as a subject by virtue of its profile corresponding to the trajector of a profiled relationship, and as an object when its profile corresponds to the landmark. Although Figure 7 assumes the familiar S[VO] constituency for *Alice saw Bill*, the same grammatical relations are assigned with [SV]O constituency (where *Alice* first combines with *saw*, and *Bill* then elaborates the landmark of *Alice saw*), or even with a “flat” SVO structure. There are indeed constructions that manifest [SV] constituents:

- (21) (a) The lawyer [we hired] was incompetent.
 (b) [Jack sort of liked] but [Jill really detested] that movie we plan to see.

In cognitive grammar these can simply be assembled as [SV] constituents—there is no need to posit derivations from underlying structures with the canonical S[VO] arrangement. And of course, the well-known problem posed by languages with VSO word order does not even arise, since the characterization of objects does not depend on a [VO] constituent. The characterization of subject and object in terms of primary and secondary focal prominence is fully consonant with, if not responsible for, their high levels of grammatical activity. Though every construction has its own rationale, and other factors (including other sorts of prominence) come into play, it stands to reason that focal participants would tend to be recruited for purposes of agreement, clause linkage, antecedence, etc. Keenan and Comrie (1977) posited a universal hierarchy for access to relative clause formation that we can abbreviate as Subject > Object > Other, and most frameworks adopt this hierarchy for various reasons. On my account, the high accessibility of subjects and objects directly reflects their intrinsic nature. Particularly strong support comes from van Hoek’s analysis of pronoun-antecedent relationships (van Hoek 1995, 1997). She has achieved an impressively comprehensive and unified account in terms of reference-point organization, such that a nominal with sufficient salience establishes a dominion within which a suitable pronoun is freely interpretable as being coreferential to it. The hierarchy Subject > Object > Other proves quite important in this regard. As shown in (22), a subject can function as the antecedent of any other nominal element, but not conversely, and an object can serve as antecedent for any element other than the subject (elements in bold are to be construed as coreferential):

- (22) (a) Tom likes his mother.
 (b) *He likes Tom's mother.
 (c) Jenny put the kitten in its box.
 (d) *Jenny put it in the kitten's box.

The special, ranked ability of subject and object to serve as reference points in pronominal anaphora nicely corroborates their characterization as first and second foci on the reference-point chain defined in terms of access to relational participants. It needs to be emphasized that the focal prominence of subject and object is not *inherited from* the entities chosen for this status, but rather is *imposed on* them by the very fact of their being singled out in this way. Trajector/landmark alignment is an aspect of construal, inhering in how a situation is conceptualized, as opposed to being objectively given. While trajector status will naturally tend to be conferred on an entity that is salient for other reasons, such as an agent or a discourse topic, it is not fully predictable from such factors, nor reducible to them. From this perspective examples with so-called “dummy” subjects, as in (23), are not necessarily problematic.

- (23) (a) There are alligators in the moat.
 (b) It was obvious that the house had not been cleaned.

I do regard items like *there* and *it* as meaningful. They can be thought of as abstract “settings” or “presentational frames”, subjective counterparts of the deictic *there* and referential *it*. Instead of referring to a specific place or thing, they announce the subsequent introduction of a local or global circumstance. Now certainly an abstract presentational frame has no objective basis or intrinsic salience—it is not there beforehand to attract focal prominence, and its abstract nature ensures that it will not seem terribly salient even when invoked to bear it. I suggest, then, that such elements are coherently subsumed in the proposed analysis as a limiting case. Recall that primary focal prominence is being explicated in terms of *initial access* in conceptualizing a relationship. This is quite compatible with the description of *there* and *it* as referring to presentational frames announcing the subsequent introduction of a situation.

Observe next the privileged status of subjects in equational sentences, which specify the identity of nominal referents. Now identity per se would seem to be a symmetrical relationship. Objectively, the sentences in (24) describe the same situation.

- (24) (a) My father is the mayor
 (b) The mayor is my father.

Yet they contrast linguistically in just the way predicted by the characterization of subject as starting point, as the element one is primarily concerned with describing or locating. Hence (24)(a) would be the more natural response if I asked you to tell me about your father, and (24)(b) if I asked you to tell me about the mayor. The linguistic asymmetry is especially striking with plural generics:

- (25) (a) Wombats are marsupials.
 (b) *Marsupials are wombats.

I would analyze these as equational sentences which establish identity between sets of indefinite size comprising “arbitrary instances” of the wombat and marsupial categories (Langacker 1991: 2.2). Since the extension of wombats is included in the extension of marsupials, a set of wombats (even the maximal set) can always be equated with a set of marsupials, but not conversely. Thus (25)(a) will always be valid, for it initially focuses on a set of wombats and describes it as coinciding with a set of marsupials. But if we start with a set of marsupials, as in (25)(b), its coincidence with a set of wombats cannot be assumed.

Finally, I will mention that numerous grammatical phenomena point to a special affinity between subjects (and secondarily, objects) on the one hand, and possessors on the other. To take just one example, it is very common across languages for possessive constructions to be used in specifying the trajector, and often the landmark, of a nominalized verb. English makes liberal use of both options, e.g., *Booth's assassination (of Lincoln)*, *Lincoln's assassination (by Booth)*. This affinity is quite expected given my description of possessors as reference points affording mental access to the entities possessed (Langacker 1993b). A possessive relationship holds between two things, one accessible via the other, while a verbal trajector and landmark are points of access to the conception of a process. When a verb is nominalized (e.g., *assassinate* ---> *assassination*), the process it designates undergoes a conceptual reification and is thereby construed as an abstract thing. As a consequence, the reference-point relationship between a processual participant and the reified process becomes a relation between two things, which makes it susceptible to possessive encoding.

CONCLUSION

Cognitive grammar identifies meaning with conceptualization and emphasizes our capacity for construing the same situation in alternate ways. Once construal is properly recognized and accommodated, the meaningfulness of grammatical structure becomes apparent. Grammar is symbolic in nature, wholly reducible to assemblies of symbolic structures (form-meaning pairings). It consists of patterns for imposing and symbolizing particular ways of construing the more specific conceptual content provided by lexical items. But specificity is a matter of degree, and lexical items also impose construals. Despite the traditional dichotomy, lexicon and grammar form a continuous spectrum of symbolic assemblies distinguished primarily by their level of abstraction, hence the generality of the patterns they embody. Cognitive grammar treats them all in a unified manner and acknowledges the critical role of low-level schemas (often incorporating particular lexical items) representing generalizations of limited scope. By reducing lexicon, morphology, and syntax to a continuum of symbolic assemblies, the framework achieves a major conceptual unification. It is also highly restrictive, in that all structures ascribed to a linguistic system must either be directly encountered as parts of occurring expressions, or else capable of emerging from them through the basic processes of abstraction and categorization.

The descriptive and theoretical notions of cognitive grammar have been formulated primarily on the basis of linguistic considerations and justified by their efficacy in handling the subtle complexities of representative language data. While certain assumptions are indeed made about cognitive processing, and various psychological phenomena are invoked (e.g., figure/ground alignment, prototype categorization, grouping, focusing of attention), for the

most part these are either well established or virtually self-evident. Less straightforward (and certainly controversial) is the issue of whether the specific use made of them for the description of language structure is optimal and appropriate. I believe the internal coherence and descriptive achievements of the framework suggest a positive answer. At some point, however, other kinds of evidence have to be sought more systematically and on a larger scale than they have to date. To be sure, particular claims and ideas of cognitive grammar have been employed or tested in a number of acquisitional, clinical, computational, and experimental studies (e.g., Barsalou, Yeh, Luka, Olseth, Mix, and Wu 1993; Holmqvist 1993; Jurafsky 1996; Kellogg 1993, 1994, 1996; Ryder 1994; Sandra and Rice 1995; Tomasello 1992; Verfaillie and Daems 1996). Such research is steadily gaining prevalence and influence in all facets of linguistics. It is especially welcome in cognitive linguistics and cognitive grammar.

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Chapter 71

CONCEPTUAL COMBINATION: MODELS, THEORIES AND CONTROVERSIES*

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ABSTRACT

This paper provides a comprehensive and critical review of the major theories and models of conceptual combination, by highlighting agreements and controversies in the literature, and identifying future directions for research.

The review summarizes the basic arguments of ten major models and then presents an analytical framework to compare and contrast these models along four dimensions: (1) the causal role of schemata in the model, (2) the role of cognitive harmony or consistency in the model, (3) the pragmatic orientation in the model, and (4) the explanatory scope of the model. The review identifies areas of agreement and disagreement among the various models and theories and calls for a synthesis theory to address various theoretical weaknesses and empirical gaps in the current explanations.

Keywords: conceptual combination, schema, cognitive harmony, consistency, pragmatics

INTRODUCTION

Conceptual combination refers to the cognitive process by which people use two or more concepts to construct a new conceptual entity that a single concept is insufficient to describe. Researchers agree that the ability to combine concepts plays a fundamental role in diverse

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cognitive processes such as learning, communication, language comprehension, the composition of thoughts, and the expansion and structuring of knowledge.

In the last thirty years, there has been a very strong interest in the cognitive mechanisms involved in combining concepts in cognitive psychology and related fields such as linguistics, artificial intelligence, and philosophy. Many models and theories of conceptual combination have been proposed, among which ten models are of particular significance: Fuzzy Set Theory (Zadeh 1965, 1976, 1982; Osherson and Smith 1981, 1982); Selective Modification Model (Smith and Osherson 1984; Smith, Osherson, Rips, and Keane 1988); Amalgam Theory (Thagard 1984); Concept Specialization Model (Cohen and Murphy 1984; Murphy 1988, 1990, 2002); Composite Prototype Model (Hampton 1987, 1988, 1989, 1990, 1991); Dual-Process Model (Wisniewski 1997a, 1997b, 1999; Wisniewski and Love 1998); Constraint Model (Costello and Keane 2000, 2001); Competition Among Relations in Nominals (CARIN) Model (Gagné 2000, 2001; Gagné and Shoben 1997); Coherence Theory (Thagard 1989, 1997); and Interactive Property Attribution Model (Estes and Glucksberg 2000; Choi, Oh, Yi, and Shin 2007). This paper will critically review these ten models by identifying areas of agreement and disagreement among them, and various theoretical weaknesses and empirical gaps in the current explanations that might be addressed by a future synthesis theory.

The paper is organized as follows. In the next section, each of the ten models will be briefly described and evaluated. Then an analytical framework will be proposed to summarize agreements and controversies among the models. Questionable assumptions and issues in the current theorizing will also be critically examined in the context of a discussion of future directions for conceptual combination research.

1. CURRENT MODELS OF CONCEPTUAL COMBINATION

In this section, we will briefly summarize ten significant models of conceptual combination. The ten models can be sorted into two groups. In the first group, each model was proposed as a logical extension or modification of previous models: Fuzzy Set Theory, Selective Modification Model, Concept Specialization Model, Dual-Process Model, and Interactive Property Attribution Model. Our review will trace the development of these models, focusing on how each addresses earlier theoretical weaknesses. In the second group, the remaining five models each focus on particular aspects of the conceptual combination process: Amalgam Theory, Coherence Theory, Composite Prototype Model, Constraint Model, and CARIN Model. Our review will examine the specific aspects that are emphasized by each model in this group.

1.1. Conceptual Combination as the Intersection of Fuzzy Sets

The earliest attempt to describe the phenomenon of conceptual combination was conducted by mathematicians known as fuzzy set theorists. This attempt generated a formalized explanation of how humans combine smaller conceptual units into more complex ones (Osherson and Smith 1981, 1982; Zadeh 1965, 1976, 1982). The model is based on the

idea of referential semantics in which the meaning of a concept represented by a word equates to the extensional set of things denoted by the word. For example, the meaning of the concept *bird* refers to the set of all birds. When two concepts are combined, the resulting concept is then the intersection of the two extensional sets. Thus, if X and Y are the extensional sets of concepts x and y respectively, the conceptual combination xy is understood as the intersection of the set X and the set Y , that is the set of things that are both X and Y . For example, the meaning of *pet fish* is the intersection of *pet* and *fish*, i.e., the set of things that are both *pet* and *fish*. More formally, in classic set theory, the conceptual combination XY is defined as follows: (Let X, Y be sets) the intersection of X and Y (denoted $X \cap Y$) is the set $\{Z: z \in X, z \in Y\}$. In fuzzy set theory, the intersection of two fuzzy sets A and B with respective membership functions $f_A(x)$ and $f_B(x)$ is a fuzzy set C , whose membership function is related to those of A and B by $f_C(x) = \text{Min} [f_A(x), f_B(x)]$, $x \in X$. (Zadeh 1965).

As a formal logic model of conceptual representation, fuzzy set theory provides a strong tool to describe and analyze conceptual combination. The description is clear, logical, and parsimonious. However, as a description of conceptual structure, fuzzy set theory was strongly criticized by psychologists. The major criticisms could be summarized as follows.

The first criticism relates to whether set theory is an appropriate theory of concept representation. For example, the applicability of set theory in concept representation is limited. Osherson and Smith pointed out that the extensional view of concepts “is best suited to “kind” notions (such as *dog*, *tree* and *animal*), artifact” notions (like *tool* and *clothing*), and to simple descriptive notions (like *triangular* and *red*) where the extensional sets are easier to define. More difficult to describe are intentional or intricate concepts such as *belief*, *desire*, and *justice*” (Osherson and Smith 1981: 38). The diversity of different kinds of concepts imposes difficulties on how set theory formally describes their structure, and whenever non-kind concepts are combined, the intersection of sets is difficult to describe or formalize. Based on this observation, Murphy argued that “(i)t is very difficult to interpret (set theory) as a psychological theory at all. Even if all *pet fish* fall into the intersection of *pets* and *fish*, this does not tell us what people do with their concepts *pet* and *fish* in order to create a new concept” (Murphy 1988: 531). To be considered a psychological model, set theory should provide an intensional explanation of how or why people combine concepts.

The second criticism relates to what are known as conjunction effects. Fuzzy set theory will lead to a contradiction in its calculation whenever an object is more prototypical of a conjunction set than of its constituent sets (Osherson and Smith 1981). For example, it can be shown empirically that a guppy is more prototypical of the conjunctive concept *pet fish* than it is of either *pet* or *fish*. That is, $C_{\text{pet fish}}(\text{guppy}) > C_{\text{pet}}(\text{guppy})$ or $C_{\text{fish}}(\text{guppy})$. However, the intersection of the fuzzy sets is defined as: $(\forall x \in F) (C_{\text{pet fish}}(\text{guppy})) = \min (C_{\text{pet}}(\text{guppy}), C_{\text{fish}}(\text{guppy}))$ which implies: $C_{\text{pet fish}}(\text{guppy}) < C_{\text{pet}}(\text{guppy})$ or $C_{\text{fish}}(\text{guppy})$. In other words, “it is possible, contrary to fuzzy-set theory, for the characteristicness of an instantiation of a conjunctive concept to be greater than either of the characteristicnesses of its constituent simple concepts” (Jones 1982: 284). This apparent contradiction suggests that set intersection is insufficient to describe the conceptual combination process.

The third criticism relates to concepts that are not intersective. For example, Murphy (1988) noted that set intersection does not account for the meaning of combinations like *apartment dog*, which does not correspond to the intersection of the sets *apartments* and *dogs*. Moreover, nonpredicating adjectives, when combined with nouns, do not produce meaningful intersections. “The interpretation of atomic engineer as someone who runs equipment to make

atomic energy is not the intersection of atomic things (whatever they are) and engineers. the intersection of the two sets does not define the combined concept” (Murphy 2002: 445).

A final criticism is related to the symmetric property of set intersection which contradicts our intuitive understanding of the meaning of many conceptual combinations. Set theory presumes that noun-noun combinations are symmetric (i.e., true conjunctives), because $X \cap Y$ is equal to $Y \cap X$. However, our intuitive understanding of the combination XY usually has very different meaning than its YX counterpart. For example, “a desk lamp is a kind of lamp, but a lamp desk is a kind of desk” (Murphy 2002: 445).

1.2. Selective Modification Model

The weaknesses of using fuzzy set theory to explain conceptual combination led to an alternative explanation: the selective modification model proposed by Smith, Osherson and colleagues (Smith and Osherson 1984; Smith, Osherson, Rips, and Keane 1988). This model consists of two arguments describing how concepts are mentally represented and how these mental representations are combined. The model assumes that concepts are represented by *Attribute-value* pairs.

For example, apple may be represented by *Color-red*, *Shape-round*, *Taste-sweet* etc. Each attribute is associated with a certain weight, or “diagnosticity,” which is an empirically-determined numerical value that indicates “how useful the attribute is in discriminating instances of the concept from instances of contrasting concepts” (Smith, Osherson, Rips, and Keane 1988: 487). Each value is also associated with a certain weight to indicate its relative salience. For instance, red might be more salient than round in the apple concept, as determined by “votes” for the value by experimental subjects. Despite different terminology, *attribute-value* pairs essentially correspond to slots (or dimensions) and features in a schematic concept representation (Rumelhart and Ortony 1977; Rumelhart 1980).

The model further proposes that the meaning of an adjective-noun combination results from a process of “adjective modification” in which, the adjective modifies the noun: “Each attribute in the adjective concept selects the corresponding attribute in the noun concept; then, for each selected attribute in the noun, there is an increase in the salience (or votes) of the value given in the adjective, as well as an increase in the diagnosticity of the attribute.

Consider shrivelled apple as an example. Presumably shrivelled contains attributes pertaining to shape and texture; accordingly, it would select these attributes in the apple prototype, boost their diagnosticities, and shift their votes away from round and smooth and toward irregular and bumpy” (Smith, Osherson, Rips, and Keane 1988: 492).

Selective modification is regarded as the first psychological model of conceptual combination. The main contribution of this model is that it highlighted important aspects of conceptual combination, including typicality effects (i.e., that the typicality of a combination is not a simple function of the typicality of component concepts) and the conjunction effect (i.e., when an item is well described by a conceptual combination, it is usually more typical of that concept than of the two components).

However, the model suffers from two major drawbacks. First, the scope of the model is limited to only one kind of conceptual combination, namely, predicating adjective-noun phrases such as *red apple* or *long vegetable*. The model does not explain other types of

combinations such as nonpredicating adjective-noun combinations like *atomic engineer* (Murphy 2002) or noun-noun combinations like *telephone television*.

Second, the process of conceptual combination described by this model is problematic. As discussed by Murphy: “The main problem with this theory that later writers have criticized is its assumptions about modification. Consider the way modification works for the concept *red apple*. The adjective *red* finds its match in the schema: There is a feature with the same name. That feature now gets all the votes, and its dimension gets a higher diagnosticity rating.

However, there are more complex cases that aren’t so easily accommodated. It has been argued that sometimes, the exact feature would not be present in the concept already, and yet people can figure out how to modify it. Indeed, there may not be an obvious dimension for the modifier to affect. Furthermore, sometimes more than one dimension is altered. Thus, the modification process itself has been argued to be much more complex than Smith et al. let on” (Murphy 2002: 449-450).

1.3. Concept Specialization Model

Murphy and Cohen proposed the concept specialization model to address weaknesses of the selective modification model (Cohen and Murphy 1984; Murphy 1988, 1990, 2002). Similar to the previous model, the concept specialization model assumes a schematic representation of concepts where nouns are represented as schemata with slots (dimensions) and fillers (values for each dimension). Based on this representation, “conceptual combination is a process in which a head noun concept (is) specialized by one or more of its slots being filled by the modifying concept” (Murphy 2002: 453). In this process, “knowledge is involved in choosing the best-fitting slot” (Murphy 2002: 453). For example, to understand the combination *apartment dog*, the modifier *apartment* is used to fill some slot in the head concept *dog*. What dimension or slot of *dog* is picked by the modifier *apartment*? Our background knowledge will guide us to choose the slot of *dog* that makes the most sense with *apartment* as the filler. In this case, *apartment* is classified as a type of Habitat and so fills the Habitat slot in the head concept *dog*. This provides the interpretation of “a dog that lives in an apartment”. Beyond this slot-filling process, the model proposes that further interpretation and elaboration occurs in which we use our background knowledge to expand our initial interpretation. This process seeks to make an interpretation more coherent and complete by retrieving information from our background world knowledge that is relevant to the interpretation. For example, people might elaborate that an apartment dog is cleaner, smaller and quieter than other dogs. This elaboration generates a rich conceptual combination with emergent features that were not part of the original concepts.

As an extension of the selective modification model, concept specialization can account for more complex combinations. As Murphy explained: “one way to relate these two models is to think of the feature weighting model (selective modification model) as a simpler version or subset of the specialization model. That is, the specialization model is very similar in the way it deals with simple features, but it adds another layer of conceptual operations – the elaboration based on world knowledge” (Murphy 1988: 535). However, later researchers noted two major issues in this model’s explanation.

First, the concept specialization model can account for limited types of interpretations (Costello and Keane 2000; Wisniewski and Gentner 1991). The model can only account for

conceptual combinations where the head and modifier concepts are linked by some kind of thematic relation, but ignores the possibility of property-based interpretation. Wisniewski and Markman (1993) used the example *robin hawk* to illustrate. *Robin hawk* could be interpreted as “a hawk that preys on robins”, by filling the Preys slot in the schema representation of *hawk* with the modifier name. The meaning generated this way explains the thematic relation between *hawk* and *robin*. However, it does not allow for properties of the modifier to be transferred into the head representation. This means that an interpretation such as “a hawk with a red breast” cannot be explained by this model.

Second, the process of concept specialization is worth further scrutiny. The model suggests that people attempt to place the modifier into the best fitting slot in the head noun’s schema. However, beyond a metaphorical description, the mechanisms involved in cognitively “filling a slot” are not specified in the model. Intuitively, it is not the whole modifier concept that fills the slot in the head concept. For example, the meaning of *apartment dog* does not result from the whole concept of *apartment* filling the Habitat slot of *dog*, but only certain aspects of *apartment*. The concept of *apartment* has its own rich and complex schematic structure, potentially including dimensions related to rent, size, storey, apartment number, landlord, etc. None of these dimensions would be relevant to the Habitat slot of the concept *dog*, but what happens to them in the slot filling process is not clear.

1.4. Dual-Process Model

Wisniewski (1997a, 1997b, 1998, 1999) proposed the dual-process model as a successor to address some of the weaknesses in the concept specialization model and to account for a wider range of empirical data. The model assumes that concepts are represented by a schematic structure, and proposes three general types of conceptual combination: property-based, relation-based, and hybrid interpretations. “Relation-linking interpretations involve a relation between the referents of the modifier and head concepts. For example, people sometimes interpret *robin snake* as “a snake that eats robins”. In property interpretations, people assert that one or more properties of the modifier concept apply in some way to the head concept, as in “snake with a red underbelly”, for *robin snake*. A third, less frequent type of interpretation is hybridization. These interpretations refer to a combination of the constituents (e.g., *a robin canary is „a bird that is a cross between the two – half robin and half canary”*) or to a conjunction of the constituents (e.g., *a musician painter could refer to someone who is both a musician and a painter*)” (Wisniewski 1997b: 168-169). The dual process model proposes that these different interpretations arise from two different cognitive processes: relational combinations result from integration (also known as scenario creation), while property-based combinations result from comparison and construction (hybridization may be considered as both).

In a process similar to Fillmore’s (1968, 1976, 1982) case and frame grammar, scenario creation generates a relation-based interpretation, “...creating a plausible scenario involving the constituents of the combination. ... For example, a plausible interpretation of *truck soap* is “*soap for cleaning a truck*”, because truck can be bound to the recipient role of cleaning (i.e., the thing being cleaned), while soap to the instrument role (*what is used to do the cleaning*)” (Wisniewski 1997b: 174).

Property-based interpretations start from comparing commonalities and differences between the head and modifier concepts along comparable dimensions, and selecting a property from the modifier to apply to the head. When multiple differences are found, several factors regulate the choice of the best property to be transferred to the head concept, including the communicative context, the salience of the property, cue and category validity, and plausibility. After comparison, the selected property is used to construct a new version of that property for the combined concept. “The new property must bear enough resemblance to its source in the modifier so that people can determine how the modifier contributes to the meaning of the combination... at the same time, the construction of the new property must not alter the head noun concept in such a way that it destroys its integrity” (Wisniewski 1997b: 176). For example, “in interpreting fork spoon, people could begin by aligning the handle of fork with the handle of spoon, and the end of fork with the end of spoon and note an important difference: forks have prongs on their ends but spoons have “little bowls” on their ends... the comparison process identifies where in the representation of spoon the property “has prong” can be incorporated (on the *end of spoon*). However, there is a conflict between mentally connecting this property to the *end of spoon* and staying within the referential *scope of spoon*... People can resolve this conflict by mentally attaching the prongs to the end of the little bowl and shortening them or by mentally attaching the prongs to the *top of the spoon*” (Wisniewski 1997b: 176-177).

The dual-process model extends the concept specialization model by providing an explanation of different types of interpretations, especially by accounting for processes involved in property-based conceptual combinations, and by synthesizing schema based theories of conceptual combination into one model. However, critics of the dual-process model have argued that it lacks a detailed explanation of the underlying cognitive mechanisms involved. For example, Costello and Keane (2006) noted that “the elaboration or construction process ... is clearly a very complex process that is, as yet, unspecified” (Costello and Keane 2006: 334). Similarly, Murphy (2002) pointed out that “what is not yet known is the online process by which one of these interpretations is constructed / selected. The feature-mapping process involves comparing the two concepts, identifying a feature of the modifier that could be plausibly transferred over to the head noun, and carrying out that transfer. The slot-filling process involves seeing whether there is a relation available in the head noun that the entire modifier could fill, and then constructing that relation. Furthermore, both of these are complicated by the possibility of construal (e.g., interpreting skunk as referring to a bad smell), which allows many more ways of possibly relating the concepts. How all these alternatives are considered (or if they aren't, how they are ruled out) is at this point not clear” (Murphy 2002: 458-459).

1.5. Interactive Property Attribution Model

The interactive property attribution model was proposed by Estes and Glucksberg (2000) as an extension of Wisniewski's dual process model. Specifically, this model provides an explanation of property-based interpretation by suggesting that it is not similarity between component concepts, but feature interactions between the head and modifier, that guide property-based interpretations. By assuming a schematic representation of component concepts, the model proposes that “the modifier and the head play different, but equally

important, roles: The head provides relevant dimensions, whereas the modifier provides candidate properties for attribution. For example, in the combination *shark lawyer*, the head concept lawyer provides relevant dimensions for attribution (e.g., TEMPERAMENT, COMPETENCE, COST, etc.), and the modifier shark provides salient candidate properties (e.g., “predatory,” “aggressive,” and “vicious”) that can be attributed. ... (I)n the interactive property attribution model ..., instead of exhaustively aligning the dimensions and comparing the features of the two concepts, people align the relevant dimensions of the head with salient properties of the modifier” (Estes and Glucksberg 2000: 29-30).

The interactive property attribution model made two important extensions beyond previous models. First, it proposes that the head and modifier do not need to exhaust their complete list of dimensions for comparison and alignment as suggested by dual-process model; instead, only certain dimensions of the head concept are activated which are relevant to salient properties of the modifier. The second extension is the observation that relevance and salience of dimensions and features are context-dependent, rather than context-independent as assumed by most previous models. That is to say, “a salient feature of a modifier may increase or even introduce the relevance of a dimension in the head concept, and vice versa. For instance, NUMBER OF LEGS is not a particularly relevant dimension of *table*, since almost all tables have four legs. However, that dimension becomes relevant in the combination *octopus table*, when interpreted as a table with eight legs” (Estes and Glucksberg 2000: 30).

The preceding five models of conceptual combination have been reviewed chronologically according to their first appearance in the literature, because each can be regarded as an extension or replacement of previous models, which addresses prior limitations and offers increasing explanatory power. The remaining five models to be reviewed were proposed over a similar time-frame, and emphasized particular aspects of the conceptual combination process, but were not proposed as explicit extensions of previous models.

1.6. Amalgam Theory

Thagard (1984) proposed a theory of conceptual combination within the context of philosophical investigations on the phenomenon of scientific concept development. It is “a theory of how new concepts can arise, not by abstraction from experience or by definition, but by conceptual combination. Such combination produces a new concept as a non-linear, non-definitional amalgam of existing concepts” (Thagard 1984: 3). The basic claim of amalgam theory is that “conceptual combination requires mechanisms for reconciling the conflicting expectations contained in the candidate concepts” (Thagard 1984: 4).

Using formalized language, this theory assumes a schematic representation of concepts (the paper adopted the term “frame” from Minsky 1975) with slots and values (i.e., each concept has slots C_i with values $C_{i,1} \dots C_{i,n}$), and proposes that a new concept C_3 is formed from initial concepts C_1 and C_2 by selecting from $C_{1,j}$ and $C_{2,k}$, a subset of slots $C_{3,m}$ for combined concept C_3 . Thagard proposed six procedural rules to regulate the process of slots and value selection. For example, “a concept concerning a kind of physical object which has a value for size is also likely to have a value for weight. Conceptual combination should preserve such linkages” (Thagard 1984: 7).

Other rules propose that if a slot is chosen by conceptual combination, the value of the slot will depend on the adjectival concept, the variability of the concept, specific examples of the combination, or the representativeness of given instances of the combination. Specifically, the theory proposed that when we try to reconcile conflicting slots, we tend to favor those that contribute to desired problem solutions.

For example, “suppose that in forming the combined concept of a Canadian violinist you notice that your friend the Canadian violinist prefers hamburgers to classical French cuisine. In order to explain this preference, you may add the default expectation about Canadians to your frame for Canadian violinist, overruling the expectation derived from the frame for violinists” (Thagard 1984: 9). To reconcile the conflicting preference of food by Canadian violinist, we favor the connotation that “Canadians usually prefer hamburgers” to resolve the conflict that was brought in by *Canadian* and *violinist* (who supposedly prefer classical French cuisine).

Amalgam theory was the first model to suggest that conceptual combination is a kind of problem solving process of reconciling conflicting expectations contained in the candidate concepts. This general line of thinking is consistent with Thagard’s (1997) later theorizing of coherence on this problem (to be discussed below). The six procedural rules specify how features of the candidate concepts and empirically observed instances are reconciled into a non-conflicting set for the new, combined concept. However, how these rules might be implemented cognitively is not specified by the theory.

Further, the theory emphasizes the importance of specific examples in resolving the conflicting expectations contained in our component concept schema. For example, four of the six rules are example-driven procedures, in which empirical observations influence the meaning of a combination. However, some conceptual combinations do not have ready-made examples, especially novel combinations such as *triangular basketball* or *tasty computer*. How conflicting expectations are reconciled for such novel combinations needs more theoretical exploration.

1.7. Composite Prototype Model

Hampton proposed the composite prototype model (Hampton 1987, 1988, 1989, 1990, 1991) at about the same time as Murphy proposed the concept specialization model. The model assumes that concepts are represented schematically as sets of attributes connected by theory-driven relations. For example, we might know that birds have wings and can fly (attributes) and that having wings is an enabling condition for flight. Attributes are assumed to have a quantitative “degree of definingness” called Importance, which parallels with definingness (Smith, Shoben, and Rips 1974), cue validity (Murphy 1982), diagnosticity (Smith and Osherson 1984), or centrality (Barsalou and Billman 1989). It reflects the relative likelihood of an item belonging to a category given that it does or does not have the particular attribute. “At the top end of the scale of attribute importance there may be some attributes which are so important as to be necessary for category membership. For example HAS GILLS may be treated as a necessary attribute of FISH” (Hampton 1991: 106).

Based on these assumptions, Hampton proposed that “a conjunctive concept is then represented semantically by a composite prototype... which is formed as the union of the sets of attributes from both „parent” (constituent) concepts. Thus initially the concept PET FISH

will have all the attributes of both PET and FISH prototypes” (Hampton 1991: 107). The combined set of attributes is then modified based on a necessity constraint, which specifies that a necessary attribute of one constituent concept will also be a necessary attribute for the conjunctive. For example, if “has gills” is necessary for fish, then it will also be necessary for pet fish. For non-necessary attributes, their importance is determined as a monotonic positive function of importance for each constituent concept and attributes with low average importance will be dropped from the conjunctive set.

After forming the set of attributes for a conceptual combination, a consistency checking procedure is applied, and “(w)here there are incompatible attributes, a choice has to be made to delete certain attributes” (Hampton 1991: 107). The consistency constraint incorporates several rules. When a non-necessary attribute of a constituent concept has a conflict with the necessary attribute of the other constituent concept, it will not be used by the conjunctive. “For example, if PETS typically breathe air, but this is inconsistent with living underwater, which itself is necessary for the concept FISH, then breathing air will not be possible for PET FISH” (Hampton 1991: 108). When the conflict is between two necessary attributes of two constituents, then the conjunction is an empty set - a “logical impossibility” (Hampton 1991: 108). “When the conflict involves two non-necessary attributes, then the choice of which to delete will depend on their relative importance, on the overall consistency that can be achieved with respect to the other inherited attributes, and on the context in which the phrase is being used” (Hampton 1991: 108).

The composite prototype model contributes by proposing the necessity and consistency constraints, which exhibit a strong pragmatic orientation. This model is applicable to both novel and mundane combinations. As Hampton explained, “the proposed model could be applied to the conjunction of well-defined concepts with a core of common element defining features, with the desired results. The necessity constraint would ensure that all defining features of each concept remain critical for the conjunctive concept, and the consistency constraint would ensure the correct identification of nonoverlapping sets. Well-defined concepts would therefore require no different treatment in the model” (Hampton 1991: 108).

It is notable that this model bears some similarity to fuzzy set theory, in that the union of the attribute sets of constituent concepts corresponds closely with the intersection of the extensional sets denoted by each constituent concept. Hampton’s model can, therefore, be viewed as a kind of extension of fuzzy set theory by suggesting cognitive processes involved in the intersection of extensional sets. It also bears similarity to later Wisniewski’s hybridization interpretation whereby the meaning of a conceptual combination is taken to be a hybrid of the constituent concepts.

1.8. Constraint Model

The constraint model was proposed by artificial intelligence scholars Costello and Keane (1997a, 1997b, 1998, 2000, 2001). This model focuses on the efficiency of the conceptual combination process based on pragmatic principles, which have been implemented as a computational model called C3. The following will focus on the theoretical model and ignore technical details associated with its computational implementation.

Similar to other models, the constraint model assumes that concepts are represented in a schematic structure. When people understand a novel combination, they construct a combined

concept to represent that combination. In the process of combining, people assume that everyone involved in the communication follows the cooperative principle as theorized by Grice (1975). “Three constraints ... follow from this assumption. By following these constraints the listener can construct the correct concept as intended by the speaker” (Costello 2004). The first constraint is called plausibility. Because it is assumed that everyone in the communication is cooperating, the intended combined concept should be something the listener already somewhat knows. Thus the listener assumes that the new combined concept must describe something plausible which is similar to things the listener has seen before. The second constraint is called diagnosticity.

Because the speaker is assumed to be cooperating, the intended combined concept is one best identified by the two words in the phrase (otherwise the speaker would have selected other words). Thus the listener knows that the new combined concept must contain some properties which are best identified by (that is, are diagnostic of) each word in the phrase. The third constraint is called informativeness.

Because the speaker is cooperating, the intended combination is one for which both words in the phrase are necessary (otherwise the speaker would have used fewer words). Thus the new combined concept must be more informative than either of the constituent words. Costello illustrated his idea with the example of *shovel bird* understood as “a bird that has a flat, wide beak like a shovel, for digging worms” (Costello 2004). In this case, the listener constructs an understanding with the diagnostic properties of shovel (flat, wide, and used for digging) that is something plausible (bird digging worms) and informative (flat, wide beak).

The constraint model contributes by emphasizing pragmatic principles and addressing the possibility of multiple interpretations for novel combinations and how different interpretations are selected. For this reason Costello (2004) describes the model as a pragmatics of conceptual combination. Theoretically, however, it is notable that Grice discussed cooperation in communication in relation to four cooperative principles (quality, quantity, relevance, and manner), to explain how listeners could arrive at a speaker’s meaning and why speakers could mean more than they said. Grice argued that it is a violation of the cooperative principles that produces extra meaning not contained in what is said.

Although the constraint model borrows the general idea of cooperation, the proposed plausibility, diagnosticity, and informativeness constraints do not correspond directly to Grice’s four cooperative principles. Thus, whereas many communicative and pragmatic constraints may influence human cognition, why these particular three are emphasized by Costello and Keane is not clear.

1.9. Coherence Theory

Thagard (1997) proposed a coherence theory of conceptual combination following the basic line of thinking in his 1984 paper that conceptual combination involves solving a problem by reconciling conflicting expectations contained in the candidate concepts. The basic argument of coherence theory is that elements in a conceptual system (concepts, propositions, parts of images, goals, actions etc.) can cohere (i.e., fit together) or incohere (i.e., resist fitting together as described in Thagard 1989, 1997, 1998). If two elements cohere, there is a positive constraint between them. Otherwise, there is a negative constraint between them. “A positive constraint between two elements can be satisfied either by accepting both

of the elements or by rejecting both of the elements. A negative constraint between two elements can be satisfied only by accepting one element and rejecting the other. The coherence problem consists of dividing a set of elements into accepted and rejected sets in a way that satisfies the most constraints” (Thagard and Verbeurgt 1998: 2-3). Conceptual combination is therefore viewed as an “instance of coherence conceived of as maximization of constraint satisfaction” which “requires us to apply some concepts to a situation and withhold other concepts in such a way as to maximize the overall satisfaction of the constraints determined by the positive and negative associations between the concepts” (Thagard 1997). In practice, Thagard models such problems by constructing a constraint network with elements of all possible inferences of the head and modifier concepts. He then uses certain connectionist algorithms to propagate association weights in a way that maximizes coherence by accepting some elements and rejecting others. The output is “an interpretation of the relation between the head and modifier, as well as a collection of inferences about the object denoted by the head as characterized by the modifier. If the most coherent interpretation is nevertheless not very coherent, then move to other mechanisms such as analogy and explanation that produce incoherence-driven conceptual combinations” (Thagard 1997). Thagard (1997) used racial stereotypes associated with the conceptual combination *well-dressed black* to illustrate. He suggested that people confronted with this combination might activate a network of associated concepts such as *aggressive* or *poor ghetto inhabitant* for *black*; and *businessman*, not poor and not aggressive for *well-dressed*. The positive constraints in this network include the associations that ghetto blacks are aggressive, while negative constraints include the negative association that ghetto blacks tend not to be businessmen. Apparently, this is not a coherent network. To understand the meaning of this combination, we need to come up with the most coherent interpretation, which best satisfies the constraints. A connectionist algorithm is used to maximize coherence by rejecting *aggressiveness*, resulting in the interpretation of *well-dressed black* as “a black businessman who is not an aggressive ghetto black”.

Different from his earlier amalgam theory, Thagard’s coherence theory does not depend on schematic concept representation and uses connectionist logic to achieve coherence rather than a system of logical rules. Perhaps the most important contribution of this theory to the field of conceptual combination is the explicit orientation toward coherence and consistency in a cognitive network. The basic assumption is that a conceptual network tends to evolve toward a more stable and harmonious state through “the maximal satisfaction of multiple positive and negative constraints that is achieved by some parallel constraint satisfaction algorithms” (Thagard and Verbeurgt 1998: 1).

As such, coherence theory exhibits a basic assumption of goodness-of-fit or harmony as emphasized by Gestalt psychology. However, as explained by Thagard (1997), the current coherence-driven constraint-satisfying model has difficulties explaining non-predicting combinations such as apartment dog and incoherence-driven novel combinations like web potato where meaning may be motivated not by coherence but by the failure to find coherence. Finally, the connectionist algorithms used in coherence theory are not a direct reflection of mental activity, but a simulated approximation of the mind.

1.10. CARIN Model

The Competition Among Relations In Nominals (CARIN) theory (Gagné 2000, 2001; Gagné and Shoben 1997, 2002) provides a model of conceptual combination that uses our prior experience of the kinds of thematic relations that words have in compounds to predict what interpretations people will produce, and what compounds people will find easiest to understand. In linguistics, thematic relations between two words in a compound have often been examined by developing taxonomies of relations required for interpreting combinations (Kay and Zimmer 1976; Gleitman and Gleitman 1970; Downing 1977; Levi 1978). For example, Levi (1978) identified 15 thematic relations (such as Cause, Has, Make, For, Is, Use, About, etc.) to classify the meanings of many familiar compounds.

Unlike models which use a feature based schematic representation of concepts, the CARIN model assumes a kind of schematic representation of the relations between concepts. That is to say, it assumes a slot-type structure where slots are not features of the concept but are the kinds of thematic relations it can have with other concepts. The internal feature representation of concepts is largely irrelevant in this model, where the goal of conceptual combination is to fit compounds into existing relational templates. Specifically, the model argues that people possess distributional knowledge based on their experience of how often particular relations are used with particular concepts, corresponding with variable relation strengths for concepts. These relations “compete for the interpretation of the combined concept and ... the difficulty of interpretation is a function of the relative strength of the selected relation. ... Interpretations are easier if the required relation is of high strength than if the thematic relation is of low strength. Other things being equal, it is easier to arrive at the correct interpretation for *mountain stream* than it is for *mountain magazine* because the Locative relation has a greater strength relation than does the About relation” (Gagné and Shoben 1997: 81). Thus combinations involving typical thematic relations will be easier to understand than those involving atypical relations.

The CARIN model proposes a linguistic taxonomy of 16 thematic relations between component words, including Cause, Has, Make, For, Is, Use, Located, etc. By paying attention to the kinds of thematic relations that words assume and adding weights to these relations, the model predicts the priority between different thematic relations when constructing an interpretation for a compound. The model differentiates between the roles of the head and modifier concepts and, unlike other models which primarily emphasize the head concept, CARIN places most emphasis on the modifier by suggesting that it selects a thematic relation for the compound during the combination process. It is easy to conclude, however, that the 16 relations proposed in the model are too abstract to capture the variety of meaningful interpretations that can arise in conceptual combinations. For example, the combinations *birthday cake* and *bravery medal* share the For relation between their components. However, treating these as the same relation overlooks crucial differences between the interpretations of For in these two combinations: a *birthday cake* is a cake used for the purpose of celebrating birthday while a *bravery medal* is a medal rewarded because of bravery. The relations denoted by simple words such as Make or For imply very complex meanings corresponding to complex conceptual structures. Using this complex conceptual structure to link two concepts will inevitably result in a rather vague interpretation. In general, each of the 16 proposed relations is itself a category of diverse relational meanings, which lacks the precision to account for particular interpretations of conceptual combinations.

2. AGREEMENTS AND CONTROVERSIES AN ANALYTICAL FRAMEWORK

The preceding review demonstrates that conceptual combination research has produced a variety of theories with different emphases and terminology. As such it is impossible to compare and contrast every aspect of the literature in this paper. However, we will use a relatively coherent analytical framework to summarize the major issues related to conceptual combination and to provide a basis on which to compare and contrast the models and theories in an integrative way. The framework consists of four dimensions reflecting major characteristics of the various models: (1) the causal role of schemata in the model, (2) the role of cognitive harmony or consistency in the model, (3) the pragmatic orientation of the model, and (4) the explanatory scope of the model. In addition to using the framework to summarize major characteristics of the models, we will also provide a critical analysis and challenge some of the fundamental assumptions related to these four dimensions. Table 1 summarizes major characteristics of the ten models in relation to our framework.

2.1. The Causal Role of Schemata

Perhaps the most prominent aspect of the conceptual combination literature is that most models rely on schema theory in two ways. First, most models assume a schematic representation of conceptual structure. Except fuzzy set theory and coherence theory, all of the current models assume a schematic representation of noun concepts as dimension-value pairs. Although the CARIN model emphasizes thematic relations between the two constituent concepts, if thematic relations are understood as a kind of dimension reflecting how concepts connect with one another, then there is not too much difference between feature-based schema models and CARIN model. Second, schemata play a causal role in the cognitive mechanisms proposed by many of the models, where conceptual combination is understood in terms of certain cognitive operations that take place along dimensions in the schema. For example, the selective modification, concept specialization, dual process, CARIN, and interactive property attribution models all propose cognitive processes related to the idea of slot-filling, where a modifier, or some aspect of a modifier, fills a slot in the head concept schema. Schemata play a different causal role in the composite prototype model, which proposed mechanisms of composing a schema to represent the conceptual combination from the union of the prototypical attributes of both component concepts, based on necessity, importance, and consistency constraints. Only the constraint model did not specify a causal role of schema in the operation of its three proposed constraint mechanisms (plausibility, diagnosticity, and informativeness), despite of assuming a schematic concept representation.

Several questions could be raised about the nature of schemata in current theories of conceptual combination and the workings of associated cognitive processes such as slot filling. The causal role of schemata in current theories of conceptual combination is based on several problematic assumptions: 1. Schema represents our fundamental conceptual structure, independent of communicative context, 2. Pre-existing schema dimensions and values are necessary, sufficient, and exhaustive for cognitive processing, 3. The weights associated with

a schema's dimensions and values are absolute and will carry over to any cognitive processing task. There are issues related to each of these assumptions.

The first assumption, that schema represents our fundamental conceptual structure, deals with the nature of schema as either intrinsic to our cognition or retrospectively imposed. Schema theory describes "how knowledge is represented and about how that representation facilitates the use of the knowledge in particular ways" (Rumelhart 1980: 34). Schema theory assumes a logical structure to organize knowledge in human mind, in which features are organized at a lower conceptual level relative to the super-ordinate dimensions. This structure seems to match our intuitive experience: when we think about a concept, we may feel that it is logically related to other concepts in a manner similar to the dimensions or values proposed by schema theory. For example, we may know that *apples* are typically *red* and that red is a color, so the concepts *apple*, *red*, and *color* have a logical relationship that could be described by an apple schema consisting of a dimension/slot *color* with a value red.

However, the fact that we understand these concepts as being logically related to one another does not necessarily imply that our minds represent them in such an organized manner in permanent memory. It is quite possible that our minds represent knowledge in less structured ways and that logical structure is imposed after the fact, as part of online processes of thinking about these concepts and the logical relations between them. Hierarchical concept taxonomies serve situation-specific purposes or goals, suggesting that they may be created or activated online in response to a communicative context, rather than permanently stored in memory. *Red* might be a subordinate concept within an apple schema if we are selecting fruit at the supermarket, but apples might be subordinate to red if we are classifying objects based on color, and red might be irrelevant to apple if we are thinking metaphorically about New York City (the big apple).

The second assumption that a schema's pre-existing set of dimensions and values are necessary, sufficient, and exhaustive for cognitive processing is quite problematic. The fact that we can quite easily make sense of novel combinations counters such a view.

For example, the novel combination *smart apple* has the same structure as the more mundane *red apple*, but it is hard to imagine that our schematic knowledge of apple would include an intrinsic dimension/slot for *intelligence* with different values in smartness.

How many dimensions are needed to account for all of the possible knowledge that we have regarding a concept and for all potential conceptual combinations? How would we know whether a limited number of dimensions such as *color*, *shape*, *texture*, etc. would be capable of representing our complete knowledge of the concept *apple*? What about social concepts such as country and suicide, or abstract concepts like *love* and *hate*? How should we determine a necessary, sufficient, and exhaustive set of slots/dimensions for these kinds of concepts? Apparently, certain extra dimensions or associations must be activated and constructed online in the process of conceptual combination, rather than being stored in memory independent of context.

By the same token, many schema dimensions may be eliminated or filtered out efficiently in the process of conceptual combination. It was observed earlier that the specific cognitive mechanisms involved in filling a slot are not specified by any of the current models of conceptual combination. The example of *apartment dog* was used to illustrate that the modifier concept *apartment* is at least as complex in structure as the head concept *dog*, including potential dimensions related to rent, size, storey, apartment number, landlord, etc., yet most of these are irrelevant to the meaning of this combination. Thus, if *apartment* fills a

habitat slot in *dog*, is it the entire complex modifier concept that fills the slot? Or is much of this conceptual structure filtered out during the combination process, and if so, how does this filtering process work?

In general, most current models place primary emphasis on the structure of the head noun schema and overlook both the potential complexity of the modifier's schema structure and theoretical difficulties associated with the slot filling process.

The third assumption, that the weights associated with dimensions and values in a schema are absolute and will carry over to any cognitive processing task, deals with the way that the importance, saliency and diagnosticity of an attribute are evaluated in various models of conceptual combination. In some of the models, the importance or diagnosticity of an attribute are evaluated within the concept itself and treated as an absolute value to carry over to the combination. Thus, if certain attributes are most central for category membership, they will be assigned a higher weight which will be carried over to the combination.

However, when combining concepts, the importance of an attribute is not just related to individual concepts alone. The weight of an attribute seems to vary in relation to the context in which the concept is used. In other words, diagnostic and important features of a concept depend on the set of other concepts that are salient at the time of use and should not be evaluated just within a single concept. For example, when the meaning of the novel combination *chocolate computer* is understood as "a chocolate shaped like a computer", most of the attributes of computer are dropped regardless of how important they might be for the individual concept, and the importance of the dimension shape increases from a low weight to the much higher value for this combination.

Based on this analysis of assumptions underlying schema-based models, we would argue that a schematic representation of conceptual structure is insufficient to account for the complexity of conceptual combination. Pre-existing schema dimensions and values cannot provide a necessary, sufficient, and exhaustive set of knowledge resources appropriate to the required cognitive processing.

A different model of how conceptual information is stored and processed in the mind is needed to address the preceding limitations. In this respect, Thagard's coherence theory may suggest a potential alternative in that its proposed cognitive mechanisms do not depend on a priori schematic conceptual structure. Instead of an overly restrictive schematic representation, a connectionist framework requires only that networks of associated concepts are activated online during cognitive processing.

2.2. The Role of Cognitive Harmony or Consistency

The second dimension of our analytical framework considers the role of cognitive harmony or consistency in conceptual combination. When we combine two previously unrelated concepts, there are always conflicting or inconsistent connotations, expectations, and attributes contained in the component concepts that need to be reconciled before a coherent understanding can be generated. For example, in the combination *television cellphone*, the first concept *television* might bring in such attributes as large screen and a remote control, which would conflict with attributes of the second concept *cellphone* such as small screen and no remote control respectively. Thus the final meaning of the combination *television cellphone* needs to reconcile these conflicts. Three conceptual combination models

(amalgam theory, coherence theory, and composite prototype model) propose explicit consistency checking mechanisms for combining concepts with conflicting expectations to generate a meaning that is coherent, consistent and harmonious. Amalgam theory proposes six procedural mechanisms by which features from candidate concepts and instances are reconciled into a non-conflicting set for the new, combined concept. The composite prototype model proposes mechanisms that focus on how necessary attributes of head and modifier influence the meaning of the combined concept. Coherence theory proposes parallel weight propagation among elements in a conceptual network to maximize coherence. Two other models (the concept specialization and dual-process models) discuss the issue of consistency implicitly by suggesting that world knowledge is used to construe or clean up conflicts in the combined concepts.

Consistency is discussed intuitively without an explicit operationalization in most of these models with an exception of Hampton's model where he proposed a way to empirically estimate attribute coherence scores as part of the composite prototype model. For example, "the PET and BIRD attributes were set up as rows and columns of a two- way matrix, and ... subjects ... were instructed to take each row attribute in turn and to rate it against each column attribute using a scale from +2 meaning "can occur together", to -2 meaning "impossible to occur together" ... For each attribute, an average coherence score was calculated, based on the mean ratings given to the attribute, averaged across subjects and across the attributes of the other concept" (Hampton 1987: 66). This is a useful contribution in that it provides a way to measure the degree of consistency empirically, rather than relying on an intuitive notion of consistency.

Consistency and harmony issues are usually approached from the connectionism and consistency perspectives in cognitive psychology. Connectionism began in the field of artificial intelligence with the goal of understanding cognition by viewing the brain as a network of interconnected neurons (Rumelhart, Hinton, and Williams 1986). Connectionist models consist of interconnected and distributed processing units that perform simple computations concurrently transforming inputs into outputs to neighboring units. Thagard's coherence theory follows this connectionist tradition in terms of the basic assumptions of goodness-of-fit or harmony. The idea of harmony in connectionist approaches is also very similar to what has been historically called cognitive balance or consistency in the psychology literature. Consistency theories began in 1940s and include a group of theories that were proposed in attempts to "uncover the structural-dynamic characteristics of human cognition" (Simon and Holyoak 2002: 283) towards consistency. "These conceptions, symmetry, consonance, balance, and simplicity, are, of course, implied in that idea with which Gestalt theory started and which always was central to it, namely, the idea of a "good" figure... this model implies a number of different entities with certain properties and standing in certain relations, which make up a constellation of factors tending toward a standard (consistent) state" (Heider 1960: 168).

These theories generally assume that inter-related cognitive elements tend to form a stable structure, whereas inconsistent elements are associated with psychological tension that will lead to a tendency towards reestablishing stability or harmony. Conceptual combination could be understood as forming a stable structure of attributes associated with two component concepts, such that conflicting attributes associated with each concept are reconciled. Particularly in the case of novel combinations, perceived inconsistency among attributes may be associated with tension and psychological forces to reorganize the cognitive elements into

a more balanced or harmonious state. For example, we might interpret *elephant fish* as “a fish with a trunk”, but nonetheless will experience some residual psychological inconsistency or discomfort in relation to this constructed meaning. The remaining inconsistency comes from perceived conflict between this constructed interpretation and a larger cognitive field associated with our background knowledge of concepts associated with *elephant* and *fish*. In this circumstance, it is likely that further cognitive effort beyond the initial interpretation will be exerted to make the larger field harmonious. What cognitive mechanisms are involved in reducing discomfort and making the system of attributes coherent and harmonious? How do we empirically examine the state of harmony before and after a combination? How could the tradition from consistency theories and connectionist models be carried over to the research of conceptual combinations so that we do not re-invent wheels when proposing explanations? Future models of conceptual combination should address these questions.

2.3. The Pragmatic Orientation

The third dimension in our framework considers the pragmatic orientation of conceptual combination models. Studying how people construct and understand a conceptual combination is largely the study of how meaning is constructed and communicated in the context of a two-word combination. There are two senses of meaning in this situation: the semantic meaning (the literal meaning or the informative intent of an expression) and the pragmatic meaning (the implied meaning or the communicative intent of the expression). All ten models made attempt to explain semantic meaning of conceptual combination, but only five (amalgam theory, concept specialization model, dual process model, constraints theory, and interactive property attribution model) consider pragmatic meaning in their explanation of conceptual combination, where communicators might cooperate to achieve intended meaning, use context and general knowledge to construct the meaning of the combination, or make sense of the combination in terms of judging the plausibility, intention, goal, and appropriateness of the combined concepts. However, the degree of emphasis and the focus on pragmatic principles varies greatly between these five models.

For example, amalgam theory proposed that there are three kinds of conceptual combinations, pure, data-driven, and goal-directed, based on the degree that context is involved. A context could consist of prospective instances of the new combined concepts, or of a goal of solving a problem by reconciling the conflicting expectations contained in the candidate concepts. The interactive property attribution model discusses only the linguistic context of the combination, involving the collocation and pairing of words in the combination, rather than a broader communicative context that might contribute to the construction of a plausible and appropriate meaning. The concept specialization model does not consider how context or communicative intent contribute to meaning, but relies heavily on the concept of “background knowledge” to explain the plausibility and appropriateness of the meaning of combinations. As a direct descendent of the concept specialization model, the dual-process model has a stronger pragmatic orientation and discusses how context, plausibility, informativeness, and definingness contribute to comparison processes and the construction of combined meaning. Costello and Keane’s constraint model explicitly proposed three pragmatic constraints that influence conceptual combination – diagnosticity, plausibility and informativeness – and implemented them in a computational simulation.

However, the underlying cognitive mechanisms that might correspond to these constraints are very vague. In computer simulations, for example, Costello and Keane operationalized the informativeness constraint as the appearance of a new predicate that was not contained in the prototype of the head concept but whether similar processes might operate in cognition is unknown.

Constructing the meaning of a conceptual combination involves numerous factors, among which the communicative context is undoubtedly one of the most important. Conceptual combination is largely a problem of communication, where someone intends to communicate a meaningful message to others within a certain context. Pragmatics provides useful tools to help conceptualize this process. However, current models that include pragmatic considerations generally lack detailed explanations of how pragmatic factors function cognitively. For example, Murphy proposed that knowledge serves two functions in the concept specialization model. “First, outside knowledge must often be consulted in order to decide which slot is the appropriate one to specialize... the second reason for consulting outside knowledge is to elaborate or clean up the concept in order to make it more coherent and complete” (Murphy 1988: 533). However, the nature of “outside knowledge” is not clearly defined and is treated as a kind of black box in which the cognitive mechanisms that guide its function are unknown. Similar observations could be made about variables such as context, appropriateness, and relevance in various models. These pragmatic factors have face validity, but the cognitive mechanisms underlying them are in need of more detailed specification.

One reason such cognitive mechanisms may be difficult to specify is an apparent assumption that pragmatic constructs such as context or knowledge require a different representation and treatment than that used for conceptual meaning. Is it possible that we could treat meaning, context, and knowledge in more or less the same way, using a common representational structure, so that whenever we discuss the meaning of a conceptual combination, we naturally include aspects of context and knowledge in the discussion? Ideally, future models of conceptual combination need to consider how pragmatic factors could be integrated with conceptual meaning in a parsimonious fashion.

2.4. Explanatory Scope

The last dimension of our framework compares the theories of conceptual combination based on the explanatory scope of each model, referring specifically to the following four distinctions: novel vs. mundane combinations, true vs. spurious conjunctives, head vs. modifier roles, and noun-noun vs. adjective-noun combinations. With respect to the first of these distinctions, a mundane combination is the one that is commonly used in everyday language, such as *red apple*, while a novel combination is the one that rarely if ever appears in our daily language, such as *elephant fish*. It has been suggested that novel conceptual combinations are a key source of creative thought, thus several of the models focus on the cognitive processes of combining concepts in novel ways (Table 1).

For the second distinction, a true conjunctive refers to a symmetric conceptual combination of two component concepts (X and Y), such that the combined concept (XY or YX) represents something that is a member of both category X and Y, regardless of component sequence. On the other hand, if XY and YX have different meanings, they are

considered to be spurious conjunctives. For example, if pet fish has the same meaning as fish pet it is a true conjunctive. Two models of conceptual combination explicitly focus on true conjunctives. In fuzzy set theory the meaning of a combination is defined symmetrically as set intersection (i.e., $X \cap Y = Y \cap X$). In the composite prototype model a particular syntactic structure of “X that is also Y” is used in experiments to ensure that combinations reflected true conjunctives (e.g., “machines that are also vehicles,” “furniture that is also a household appliance,” etc.). Most of the other theories, however, assume that XY and YX have different meanings and, therefore, focus their attention on spurious combinations.

The third distinction relates to the different roles of head and modifier concepts in contributing to the meaning of a combination. In the current literature, the head noun or head concept (sometimes simply called head) refers to the central word or concept in the combination (usually corresponding to the second word in the combination in English). The modifier refers to the word or concept in the combination that changes some aspect of the head (usually corresponding to the first word in the combination in English). Five of the models explicitly discuss the role of head or modifier (Table 1), but they differ with respect to which concept is believed to contribute most to the combined meaning.

The selective modification, concept specialization, and dual process models propose that the head concept dominates the meaning of the combination, while the CARIN model proposes that the modifier dominates by selecting thematic relations for the combination. The interactive property attribution model proposes that both head and modifier contribute equally to the meaning of the combination.

The fourth distinction is between noun-noun and adjective-noun combinations. It is interesting to note that grammatical terminology is often intermingled with cognitive terminology in the current literature. When we define conceptual combination as a combination of two (or more) concepts, we are discussing the cognitive structure of this combination. However, cognitive structure cannot be explicitly discussed without reference to the grammatical structure of words and their relations. Thus in all of the current models, a combination of two concepts equates to a combination of two words. For example, the two-word combination “elephant fish” refers to a combination of two concepts *elephant* and *fish*. Because of this, researchers frequently use grammatical terms to refer to cognitive combinations. Noun-noun combinations, such as “zebra bird,” refer to combinations of two concepts represented by nouns in the English language. Adjective-noun combinations, such as “red apple,” refer to combinations of one noun concept and one adjective concept that, arguably, expresses a feature of the object denoted by the noun. The latter are sometimes sub-categorized into predicating adjective- noun combinations (e.g., “beautiful story”) in which the combination can be re-written into a semantically correct sentence (“story is beautiful”), and non-predicating adjective- noun combinations (e.g., “atomic engineer”) in which the combination cannot be rewritten into a semantically correct sentence (i.e., the sentence “engineer is atomic” is meaningless). Except the selective modification model, most of the current models are intended to explain noun-noun combinations and only a few are adequate to explain adjective-noun combinations (Table 1). These four distinctions (novel vs. mundane combinations, true vs. spurious conjunctives, head vs. modifier, and noun-noun vs. adjective-noun) are based on current terminology used in the literature to characterize the explanatory scope of the ten models. However, it should be noted that these distinctions themselves raise certain questions or concerns in relation to theorizing the conceptual combination process.

Table 1. The Summary of ten models evaluated against the analytica framework

	Schema		Consistency	Pragmatic orientation	Explanatory scope				
	schematic representation	schema as causal factor	reconciling conflicting expectation	context, intent, plausibility, goal, appropriateness	head - modifier	noun-noun	adjective -noun	mundane vs. novel	true vs. spurious conjunctives
Interactive property attribution	yes	yes	no	somewhat	yes	yes	no	novel	spurious
CARIN	yes	yes	no	no	yes	yes		both	spurious
Coherence	no	no	yes	no	no	yes	yes	both	not explicit
Constraint	yes	no	no	yes	no	yes	no	novel	spurious
Dual process	yes	yes	yes	yes	yes	yes	no	novel	spurious
Composite prototype	yes	no	yes	no	not explicit	yes	no	both	true
Concept specialization	yes	yes	somewhat	somewhat	yes	yes	yes	both	spurious
Amalgam	yes	yes	yes	yes	no	yes	yes	both	both
Selective modification	yes	yes	no	no	Yes	no	yes	both	spurious
Fuzzy set	no	no	no	no	no	yes	yes	mundane	true

First, the assumption of the existence of genuinely conjunctive concepts is questionable. Zadeh (1982) assumes that conjunctive concepts are distinguishable from spurious conjunctions and that fuzzy set intersection is applicable only to genuinely conjunctive concepts.

Psychologically, if we artificially define concepts strictly in terms of categorical denotations, there may be genuine conjunctives representing something that is both in category X and Y. Hampton (1988) used such a strategy in experiments by directly asking subjects to think about conjunctives like “machines that are also vehicles.”

However, whenever we move to the linguistic level and use two words to denote a conceptual combination (e.g., “apartment dog”), it could be argued that the vast majority of empirically observed conceptual combinations, if not all, are really spurious conjunctives, because our intuitive understanding of the meaning of combination XY is usually very different from the meaning of YX. To repeat an earlier quote, “a desk lamp is a kind of lamp, but a lamp desk is a kind of desk” (Murphy 2002: 445).

In the communicative context, syntactic constraints function by which one word subconsciously functions as a logical operator X (i.e., the modifier) while the other word functions as a denotation Y (i.e., the head) such that X transforms Y into the denotation XY. Thus, when conceptual combinations are interpreted within a natural linguistic context and not defined artificially, it seems that there really are no genuine conjunctives and all combinations XY become so-called spurious conjunctives.

Another questionable implicit assumption made by most of the current models is that nouns represent concepts deserving of a rich schematic representation, while other parts-of-speech do not represent concepts and thus do not need to be represented by a similar cognitive structure. The earlier example of *apartment dog* showed that modifiers (e.g., apartment) are also rich concepts but, compared to head concepts, modifiers are treated by most theories in much simpler ways as mere slot fillers.

In general, it is clear that concepts exhibit a greater variety of linguistic manifestations than just nouns, including adjectives, verbs, prepositions, adverbs, etc., which deserve an equally rich representation of their conceptual structure.

If the modifier or non-noun component of a conceptual combination does more than just providing a value for a slot of the head noun concept, what might be the appropriate schematic representation of the modifier concept? How do the two schemata of the head and modifier concepts interact and influence one another in the interpretation of a conceptual combination? Future models of conceptual combination need to address these two questions.

CONCLUSION

Conceptual combination is a fundamental process of human cognition, in which people use two or more concepts to articulate and comprehend complex meanings that a single concept cannot denote. Through conceptual combination we develop new ideas, communicate with one another, learn and expand our knowledge. This paper contributes to the study of conceptual combination by comprehensively and critically reviewing ten major models, which have been proposed over the last thirty years by researchers in cognitive psychology, linguistics, artificial intelligence, and philosophy. We have examined fuzzy set theory, the

selective modification model, amalgam theory, the concept specialization model, the composite prototype model, the dual-process model, the constraint model, the CARIN model, coherence theory, and the interactive property attribution model. We summarized the basic arguments of each model and critically examined their major issues and theoretical limitations. In addition, we proposed an analytical framework to compare and contrast the ten models along four dimensions: (1) the causal role of schemata in the model; (2) the role of cognitive harmony or consistency in the model; (3) the pragmatic orientation in the model; and (4) the explanatory scope of the model. We identified areas of agreement and disagreement among the various models and theories. For example, all models assume a communicative purpose for the combination and a correspondence between linguistic words and psychological concepts. Most also agree that the component concepts (modifier or head) play different roles in the conceptual combination process, and interact with one another to generate a meaning in harmony with a person's background knowledge. Different models disagree substantially on the cognitive mechanisms involved, however, and emphasize different aspects of the process.

Finally, we have offered suggestions for future research directed toward the development of a synthesis model on the cognitive process of conceptual combination. A suitable theory should address the limitations and problematic assumptions of representing conceptual structure using schema theory in online cognitive processing. It should accommodate the requirement of cognitive consistency by specifying both the cognitive mechanisms involved in reducing inconsistency and providing empirical methods for measuring the degree of consistency before and after combination. Pragmatic considerations should be integrated with cognitive considerations, such that background knowledge and aspects of the communicative and linguistic context of conceptual combination can be represented consistently with how concepts are represented. Lastly, a complete theory of conceptual combination must account for the diversity of combinations observed empirically (including both novel and mundane), accommodate the different roles of head and modify concepts in the combination process, reflect the conceptual complexity of the full range of linguistic parts-of-speech beyond just head nouns, and account for the interaction of complex head and modify concepts and their relative contribution to meaning during the combination process.

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Chapter 72

WATER NETWORKS, THE CHINESE RADICAL, AND BEYOND

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ABSTRACT

In part based on Nie and Chen [2008], this paper studies the complicated semantic networks of WATER. It demonstrates that the concept of WATER has found its way into all major components of the Chinese language: its writing system, its morphology, its semantics, and its syntax. The result is a multidimensional network of networks. The forming of these networks—and the eventual super-network—is due not only to conceptual metaphors/ metonymies but also to other factors such as perceptual considerations and social values. In addition, since meaning is found to exist at the level below the written word, in the radical, the paper raises some important issues regarding the linguistic status of radicals in the language.

Keywords: Conceptual metaphor, metonymy, cognition and culture, embodiment, WATER, Chinese, radical, writing system

1. INTRODUCTION

Studying a set of metaphors and metonymies with the source domain WATER, my colleague and I [Nie and Chen 2008] demonstrate that WATER has been extended to a host of other cognitive domains, and the extensions it has gone through lend much support for the theoretical orientation of experientialism and embodiment.

The current study builds on that earlier work. While Nie and Chen [2008] deal with the phrasal and, occasionally, sentential level of the language, i.e, how WATER is seen in phrases and idioms of Chinese, the focus of this paper is more about the writing system (or

rather, morphology, see below) of the language: how the radicals for WATER show up in a high number of words and how these words are connected through metaphor, metonymy, and other motivational factors such as perceptual considerations. By so doing, I aim to demonstrate the degree to which the study of an intricate and complicated semantic network such as WATER can tell us about how language is influenced and determined by a host of non-linguistic factors.

There is a second aim for the present study: to raise some issues about Chinese morphology. The notion of the radical, when used in the context of the Chinese writing system, refers to part of a written word. If something is an undeniable part of a word, with its identifiable meaning or function, that thing borders on being a morpheme. However, the Chinese radical has not been recognized as such. Instead, the morphemes of Chinese are believed to be the written word, the kind of thing that one finds as a dictionary entry. The reason for this received wisdom is well-founded: While morphology, viewed as one aspect of the architecture of language, has to have psychological reality in the mind of an ordinary speaker, most pertinently one who does not read or write, the meaning and function of a Chinese radical are recognized only by those speakers who do (read and write).

However, the present study will question the neglect of attention hitherto paid to the Chinese radical. It will demonstrate that the Chinese radical plays a far more important role in the language than has been given credit for. I will return to the discussion of this at the end of the paper.

The theoretical orientation of the present study is the theories of conceptual metaphor that originates in Lakoff and Johnson [1980] but refined by many others [Johnson and Lakoff 2002, Grady 1997, Ruiz de Mendoza and Sandra 2005]. I will not attempt a literature review, as conceptual metaphor has been a well-recognized line of research for the audience of this journal.¹ Instead, I will briefly discuss the relationship between metaphor and metonymy² in the following paragraphs.

According to Lakoff and Johnson [1980], mapping in metaphor is cross-domain and mapping in metonymy takes place within one domain. Based on this, Croft [1993] proposes the notion of *domain matrix*, arguing that metaphor maps concepts in two separate domain matrixes while metonymy, within one domain matrix. Radden and Kövecses [1999] invoke Lakoff's [1987] concept of idealized cognitive model (ICM), treating metonymy as "a cognitive process in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the same idealized cognitive model" (1999: 21). Blank [1999, cf. Koch 1999], resorts to the notion of *frame* to capture metonymic relations, leaving metaphor to be handled by the classical concept of similarity [Jakobson 1956,

¹A search of the key word, conceptual metaphor, in Chen et al.'s [2007], for instance, turns out thousands of entries, and the kinds of metaphors that have been studied cover a great number of domains, such as body part metaphor [Yu 2000, 2004], time metaphor [Gentner 2002, Evans 2003], spatial metaphor [Chun 2002, Coulson and Matlock 2001], container metaphor [Kövecses 1995], emotion metaphor [Emanation 1995], web and news metaphor [Kennedy 2000], disease metaphor [Gibbs and Franks 2002], thinking metaphor [Palmer 2003, Goddard 2003], hieroglyphic script metaphor [Goldwasser 2005], political metaphor [Mio 1997], environment metaphor [Romaine 1996], immigrant metaphor [O'Brien 2003], and money metaphor [O'Connor 1998], to name just a few.

²It may be interesting to point out that metonymy has been playing the second fiddle to metaphor ever since the Greeks [Dirven 2002]. However, it has experienced a surging attention in the last decades due to its close relationship with metaphor [Dirven and Pörings 2002, Panther and Radden 1999, Barcelona 2000, Ruiz de Mendoza and Sandra 2005, Haser 2005].

reprinted in Dirven and Pörings 2002]. A similar approach is found in Panther and Thornburg [1999], although they use *scenario* instead of *frame*.

Surveying the vast amount of literature on metaphor and metonymy, particularly the interaction between them, one finds that the link between metaphor and metonymy is far more intimate and complex than hitherto assumed. For instance, Taylor [1995] proposes the notion of metonymy-based metaphors—metaphors that come about not via image schemas per Lakoff and Johnson but via metonymic relations—and Goossens [1995] coins the term *metaphonymy* to describe instances of combinations of metaphor and metonymy. Also recognizing the difficulty of teasing metaphor from metonymy is Dascal [2004], who demonstrates in detail how ARGUMENT IS WAR is a case of “double grid”: The source domain and target domain are mapped both metaphorically and metonymically. All these insights are summarized into a continuum view by Dirven [2002]—that metaphor and metonymy are not a dichotomy but are two end-points of a continuum.

In this study, I do not intend to participate in the theoretical discussion on the nature of the interaction between metaphor and metonymy. Instead, I will follow the domain approach, treating metaphor as a cross-domain mapping and metonymy otherwise. This is because, although the domain approach has been heavily criticized, it “remains firm” as a tool to distinguish between metaphor and metonymy [Dirven 2002: 37]. Besides, many of the newer theories—domain matrix, frame, and ICM—can be seen as variations of the domain approach. Hence they seem to face the same sort of challenge as does their domain approach predecessor [Haser 2005]. Besides, I am convinced that most of the tokens in our corpus are clear cases of either one or the other, hence adopting a different approach would not alter the overall results.

2. THE WATER RADICAL

2.1. The Origin of the WATER Radical

The WATER radical has its origin in Oral Bone Inscriptions, the oldest known record of the written Chinese language (1400 to 1100 B. C.). In the shape of , it is a pictorial representation of a flowing river.

Later development of the Chinese writing system gradually transformed the WATER radical into , symbolizing WATER with what is meant to be three drops of water, exclusively used on the left side of a word. Hence the radical is called *sandishui* 三滴水 ‘three drops of water.’ There are also two variations to the *sandishui*. The first is 水, which appears as both a radical (e.g., 入 ‘into water’, in which the radical on the top, 入, means “enter”) and a word, to mean “water.” The second is , a pictorial presentation of two drops of water, hence the name *liangdishui* ‘two drops of water’. Apparently,  and  were exchangeable for some time, with the exact dates unknown, as they appeared in a set of words with no difference in meaning (冲 and 冲). However, the two gradually divided their shared semantics into WATER () and ICE (). In the rest of the paper, I shall not dwell further on the distinctions among these three WATER radicals. Instead, I will treat them as allo-forms of the same notion.

The WATER radical belongs to the type of radical that represents meaning, as opposed to the majority of radicals that represent sound. Hence the word 河 ‘river’ has to its left the radical 氵 ‘water’ and to its right the radical 可, pronounced as [kə], to inform the reader that the word 河 shares the vowel with 可, to be pronounced [hə]. In the following, I will discuss different word classes that the WATER radical is used in the Chinese lexicon, based on the assumption that each appearance of the WATER radical represents the notion of WATER.

2.2. The WATER Radical in Nouns

Of the large number of nouns that contain a WATER radical, the first notable group are words that refer to bodies of water:

(1)

江: <i>jiang</i>	‘(big) river’
河: <i>he</i>	‘(small) river’
湖: <i>hu</i>	‘lake’
海: <i>hai</i>	‘sea’
洋: <i>yang</i>	‘ocean’
溪: <i>xi</i>	‘stream’
池: <i>chi</i>	‘pond’
泉: <i>quan</i>	‘spring’

Just as the words for bodies of water contain the WATER radical, so do proper nouns that refer to specific bodies of water:

(2)

汉江:	<i>hanjiang</i> ,	‘the <i>Han</i> River’
湘江:	<i>xiang jiang</i>	‘the <i>Xiang</i> River’
汨罗江:	<i>miluojiang</i>	‘the <i>Miluo</i> River’
渤海:	<i>bohai</i>	‘the <i>Bo</i> Sea’
淮河:	<i>huaihe</i>	‘the <i>Huai</i> River’
洪湖:	<i>honghu</i>	‘the <i>Hong</i> Lake’

There is hence little doubt that the WATER radical, 氵, does its job of carrying the semantics of WATER into those lexemes.

In (1) and (2), there is a one-to-one relationship between the different kinds of water and the pictorial representation of WATER. This relationship seems to continue into the next group: words that refer to different forms of water:

(3)

波: <i>bo</i>	‘(small) wave’
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浪: <i>lang</i>	‘wave’
潮: <i>chao</i>	‘tide’
汐: <i>xi</i>	‘ebb’
涟: <i>lian</i>	‘ripple’
瀑: <i>pu</i>	‘waterfall’
滴: <i>di</i>	‘drop of water’
涎: <i>xian</i>	‘mouth water’

In other words, ontology is playing a part here: Speakers see water and use the pictorial representation for WATER in the word referring to it. However, this ontological link becomes more and more tenuous as we go along:

(4)	
液: <i>ye</i>	‘liquid’
汤: <i>tang</i>	‘soup’
酒: <i>jiu</i>	‘alcohol’
泪: <i>lei</i>	‘tears’
涕: <i>ti</i>	‘discharge from the nose’
汞: <i>gong</i>	‘mercury’
泥: <i>ni</i>	‘mud’
洼: <i>wa</i>	‘indentation in the ground’

As the English glosses indicate, none of the tokens in (4) refers to things that are strictly water. They are *watery* at best: The first six, 液 ‘liquid’, 汤 ‘soup’, 酒 ‘alcohol’, 泪 ‘tears’, 涕: ‘discharge from the nose’, and 汞³ ‘mercury’ are watery, as they seem to be construed as water being mixed with other substances: WATER is hence seen as a defining feature for these entities. Since the physical state of these things is liquid, we could say that the notion of LIQUIDITY unifies them, or that the notion of WATER is extended to LIQUIDITY.

The conceptual link between WATER on the one hand and 泥 ‘mud’ and 洼 ‘indentation in the ground’ on the other cannot be said to be LIQUIDITY: Neither is liquid. However, mud contains water and an indentation in the ground catches water (hence it is more likely to hold water than the surface of the ground). Once again, we see that the notion of WATER has been invoked to offer a way of construing.

WATER also plays a part in words for ice and steam:

(5)	
冰: <i>bing</i>	‘ice’
汽: <i>qi</i>	‘steam’

³It is no accident that mercury, the only metal that is liquid under normal temperature, is the only metal being represented in the Chinese orthography with a WATER radical.

For reasons that may no longer seem too stretched: Ice comes from water below the freezing point and steam, at the boiling point.

Lastly, the WATER radical also appears in place names that are near or are surrounded by water:

(6)

洲: *zhou* ‘continent, island’

浒: *hu* ‘marshes’

浦: *pu* ‘place where a river enters a sea’

滨: *bin* ‘coast, by the sea’

港: *gang* ‘harbor’

Obviously, there is no a priori reason for these words to contain the WATER radical. However, the fact that the Chinese language has decided to represent these entities using the WATER radical as its semantic component is evidence that WATER is seen as the defining feature for them.

Even more tenuous is the relationship between WATER on the one hand and the two words in (7) on the other.

(7)

沙: *sha* ‘sand’

涯: *ya* ‘end of the earth’

In other words, one wonders why sand 沙 and the end of the earth 涯 are defined by WATER. The answers seem to be that, for the former, sand is found in oceans, seas, and rivers and, for the latter, the end of the earth is the end of a sea or ocean: One stands by a large body of water and sees no end to it in the same way one does not see the end of the earth. In terms of conceptual metaphor, the relationship between the two *ends* can be said to be motivated by the metaphor THE END OF THE EARTH IS THE END OF OCEAN.

To summarize the discussions in this section, we see that the WATER radical serves as a semantic carrier, bringing with it the characteristics of WATER into a variety of nouns in the Chinese lexicon. While the relationship between WATER and these nouns starts out as ontological—after all, a river, sea, or ocean *is* a body of water in the physical world—it becomes less and less obvious as WATER is extended through metaphor and metonymy to a vaguely discernable feature.

2.3. The WATER Radical in Verbs

While the organization of nouns with the WATER radical seems to be the ontology cline—from more ontological to less ontological—the organization of verbs with the WATER radical centers on semantic roles: the kind of argument that water is cast in in the verbal event. First of these are words that assume the role of theme for water:

(8)

流: <i>liu</i>	‘flow’
汇: <i>hui</i>	‘converge’
涌: <i>yong</i>	‘rush’
淋: <i>lin</i>	‘shower’
漫: <i>man</i>	‘overflow (of a large body of water)’
淹: <i>yan</i>	‘flood’
浸: <i>qin</i>	‘soak’
渗: <i>shen</i>	‘spread (via soaking) gradually and slowly’
凝: <i>ning</i>	‘change into solid (from liquid)’

The prototypical uses of these words in sentences either take or assume water as the subject: Water flows; bodies of water converge; water rushes (down); or water showers on the grass. However, every one of these words has been extended to take other entities as its agent or theme: 车流 ‘the flowing of vehicles’; 人群汇合 ‘(Groups of) people converge’; and 他们涌了进去 ‘They rushed in.’ In fact, a Chinese speaker has no choice but use these words for their respective meanings with any entity as theme or agent. Take 流 again: It is *the* word for the flowing and movement of things in general: 流程 ‘flowchart’, 流通 ‘movement of cash or goods’, 流浪 ‘roaming (by a homeless person)’, 流言 ‘rumor’, 流传 ‘spreading’, 气 流 ‘flowing of air’ 电流 ‘electrical current’, and 流放 ‘exile’.

There are also a large number of verbs that assumes the role of patient for water. In the following, all verbs prototypically take *water* as their patients:

(9)

汲: <i>ji</i>	‘suck’
治: <i>zhi</i>	‘control’
洒: <i>sa</i>	‘spray’
渡: <i>du</i>	‘cross’
涉: <i>she</i>	‘cross (on foot)’
泼: <i>po</i>	‘pour’
添: <i>tian</i>	‘add’
测: <i>ce</i>	‘measure, test’

As is the case with the verbs in (8), those in (9) have also been extended generic usage, taking non-water things as their patients. Take the last two of the group for instance. 添, originally meaning “add water,” now means to add anything one can imagine. 测 is similar: Its original sense of “measuring the depth of water” has been extended metaphorically to refer to the measuring, testing, or assessing everything possible. If one is to posit a metaphor

connecting the original senses of these verbs to their extended senses, it would be along the lines of Vx IS V WATER, whereby x stands for anything that is not water.

WATER also serves as the instrument of a verbal process. Consider (10):

(10)

淘: <i>tao</i>	‘wash (rice)’
沏: <i>qi</i>	‘make (tea)’
洗: <i>xi</i>	‘wash (anything)’
刷: <i>shua</i>	‘brush (teeth)’
漱: <i>shu</i>	‘rinse (mouth)’
灌溉:	<i>guangai</i> ‘water (crops)’

Obviously, without water being an instrument, there would be little in common among this group of verbs. Even in terms of instrument, water is not *the* instrument but *a* instrument for them: The instrument for 淘 ‘wash (rice)’, for instance, can be hands, a bucket, or a bowl. The instrument for 沏 ‘make (tea)’ can be hands, a tea pot, tea leaves, a tray, or tea cups. However, the appearance of the WATER radical, 氵, in these words indicates that it is WATER that helps speakers unify this group of otherwise disparate verbs into a network of concepts.

Water may also be the location for verbal events, as is seen in (11), in which the relationship between WATER and the verbal meaning is quite clear:

(11)

漂浮:	<i>piaofu</i> ‘float’
游泳:	<i>youyong</i> ‘swim’
溺: <i>ni</i>	‘drown’
洄: <i>qiu</i>	‘swim’
淌: <i>tang</i>	‘wade’
沉: <i>chen</i>	‘sink’
没: <i>mo</i>	‘submerge’

and manner, as in (12):

(12)

沥: <i>li</i>	‘(fall) drop by drop’
汨: <i>gu</i>	‘(as) quickly (as the flowing of water)’
沸: <i>fei</i>	‘(emerge, appear) as boiling water’
活: ⁴ <i>huo</i>	‘(moving) like water’

⁴This word is used here in its very original sense. Its meaning of living is the result of metaphorical extension, which I will ignore in this paper.

In other words, speakers project the different manners of water onto the manner of other domains, thus viewing the verbal event in the same way they view water.

2.4. The WATER Radical in Adjectives

While the ontology cline seems to be the basis for nouns containing the WATER radical and the semantic roles of water seem to be the basis for verbs containing the WATER radical, perceptual transfer plays an important part in the appearance of the WATER radical in adjectives.

First are a group of adjectives that describe the different looks of water.

(13)

清淨: *qingjing* ‘clean’

污浊: *wuzhuo* ‘dirty’

浑沌: *huntun* ‘unclear, (a) shapeless (mass)’

洩: *you* ‘slow’

渺: *miao* ‘endless’

深: *shen* ‘deep’

浅: *qian* ‘shallow’

满: *man* ‘full’

Just as is the case with the words discussed earlier, the looks of water are extended to the looks and appearances of other things. Take the last three adjectives for example. 深 ‘deep’ and 浅 ‘shallow’ are used to describe, respectively, the depth and shallowness of anything possible, including concrete things like holes, wells, and tunnels and abstract things such as knowledge, personality, and thought. Similarly, anything full is said to be 满 ‘full’. In fact, it has to be said to be 满. The metaphorical extension appears to be mandatory, leaving the speakers of the language no other alternatives.

The adjectives for *thick* and *thin* in Chinese also contain the WATER radical: 浓 *nong* and 淡 *dan*, respectively. However, their etymological origins were not based on the looks of water, but on the looks of fog.

This is hardly surprising by now: Fog is formed with particles of water, therefore its looks are seen as looks of water.

Next come the adjectives that describe the sounds made by water:

(14)

潺: *chan* ‘(sound) like water flowing leisurely’

汹: *xiong* ‘(sound) like water flowing rapidly’

The textile sense is also invoked:

(15)

滑: *hua* 'slippery'
 温: *wen* 'lukewarm'
 湿: *shi* 'wet'
 冷: *leng* 'cold'

These adjectives seem to have been evolved from the sensation produced by the touching of water or watery things. 滑 'slippery' describes the sensation of touching (or stepping on) wet rocks, 温 'lukewarm' the sensation of feeling lukewarm water, 湿 'wet' the sensation of touching wet objects, and 冷, the sensation from the touch of cold water. Once again, these original meanings have been extended to non-water things. Take 滑 'slippery' again. It is a word that refers to the attribute of slipperiness of everything.

How about the sense of taste? My search has turned out only one word that etymologically describes the taste of water: 涇 *ce* 'dry, lack of water in taste'.

Finally, I have found no adjectives with the WATER radical that describe the smell of water or watery things. This absence, if it turns out to be true based on more extensive research, is also interesting. It may have to do with the Chinese folk definition of water: "A colorless and smell-less liquid."

To sum, this section, on the appearance of the WATER radical in the Chinese adjective lexicon, reveals yet another organizing principle based on WATER, that of senses. While it is different from the WATER radical containing nouns, which are based on an ontological cline, and WATER radical containing verbs, which are centered on the different semantic roles that water is supposed to play in the verbal event, it offers support for the notion of the embodiment of language, albeit in a different light. Since the sensory motors are the primary means for human beings to know and to make sense of the world around them, it is only natural for Chinese speakers to create part of their adjectives based on the sensation gained through the senses and then extended their semantics to other, non-water things.

2.5. 没 *Mo* to 没 *Mei*: A Case of Grammaticalization

In this section, I discuss the negation marker, 没 *mei*, demonstrating how it has been grammaticalized from the meaning of "being submerged in water."

The written word, 没, pronounced [mo], originally referred to (and it still does in Modern Chinese as one of its senses) to the concrete event of something being immersed in water, often used with 淹 *yan* 'flood, cover' to form 淹没 '(water) make (something) disappear (by the act of covering it)'. This sense was then extended to mean disappearance. To answer the question "Where is X?", one can simply say "没了 *meile*," to mean X has disappeared (being lost, consumed, or used up). This extension was accompanied with a change of pronunciation in some dialects such as Mandarin. In those dialects, a distinction exists between [mo] and [mei], with the former to mean "submerged" and the latter to mean "disappeared." In other

dialects such as the Shaanxi dialect, however, such a change did not take place: The written word 没 has retained its pronunciation of [mo] even if it refers to disappearance. So, the transfer from the semantics of being submerged to the meaning of disappearance constitutes the first step on the path of grammaticalization, and this step seems to be enabled by the metaphor DISAPPEARING IS BEING IMMERGED IN WATER.

Once meaning disappearing, 没 became able to refer to absence or non-existence, for if something has disappeared, it no longer exists (NON-EXISTENCE IS DISAPPEARANCE). This could be the reason for 没 to be grammaticalized into the negation marker in existential constructions:

(16)

我	没	有	书
<i>Wo</i>	<i>mei</i>	<i>you</i>	<i>chu</i>
I	not	have	book

‘I don’t have books.’

There is the final step: The notion of NON-EXISTENCE is extended to NEGATION in both the past tense construction:

(17)

他	昨天	没	来
<i>Ta</i>	<i>zuotian</i>	<i>mei</i>	<i>lai</i>
he	yesterday	not	come

‘He did not come yesterday.’

and the present perfect construction:

(18)

他	还	没	来
<i>ta</i>	<i>hai</i>	<i>mei</i>	<i>lai</i>
he	still	not	come

‘He still hasn’t come.’

As the negation lexeme for the existential construction, the past tense construction, as well as the present perfect construction, 没 is one of those few lexemes that help form the main machinery of the language. However, this important development of the language was possible in part due to the speakers’ conceptualization of WATER.

2.6. Summary of Section 2

I have aimed, in Section 2, to demonstrate how the WATER radical functions to organize the lexicon in Chinese. When used in nouns, the words with the WATER radical seem to start out on an ontological basis: The radical appeared in nouns whose referents are observably

water or having clear characteristics of water. Through metaphorical and metonymic extension, the referents of these words have gradually less and less water characteristics. One can say that nouns with the WATER radical form a network of reference on the ontological cline.

Verbs with the WATER radical, on the other hand, centers on semantic roles. These verbs assume different kinds of arguments for water: water as theme, water as patient, water as instrument, water as location, and water as manner.

Thus semantic roles function to organize all these verbs into yet another network, this time of process.

Furthermore, the WATER radical groups adjectives into categories based on human perception. There are adjectives that describe the characteristics of water which come to the speaker through the sense of sight; there are adjectives that are essentially onomatopoeic, representing the sounds of water; there are adjectives that describe the sensation resulting from the speakers' textile sense; and there is at least one adjective that describes the taste of (the lack of) water. The absence of adjectives involving the sense of smell is seen as a consequence of the folk definition of water in the language, that water is a "colorless and smell-less liquid." These adjectives form yet another network—a network of senses.

Lastly, I briefly touched upon the process of grammaticalization of the negation lexeme in the existential construction, the past tense construction, and the present perfect construction.

Put all these discussions together, it may not be too far-fetched to view the WATER radical as a means to organize different word classes into networks based on different principles and then to organize these different networks into a whole. After all, a literate Chinese speaker will know that the presence of the WATER radical in a word generally indicates some waterness in the concept encoded in that word, although the relationship may not always be obvious.

At various places, I demonstrated that a particular word with the WATER radical will go through further extension. In Section 2.4, for instance, I argued that the word 满 'full' was originally used to describe the fullness of water but has then been extended to refer to the fullness of anything. The extension does not stop there, though. 满 is also combined with another word or morpheme to form a large number of words or phrases such as 自满 "self full→self-important" and 满意 'happy, satisfied'. If one traces every word on the lists so far discussed, let alone the great many that have not been covered, one would discover more networks.

I shall not do so but will now use Nie and Chen (2008) to illustrate the same point: How WATER function at the phrasal level of the language to form more networks.

3. WATER NETWORKS IN PHRASES

In Nie and Chen [2008], we argue that six WATER super metaphors form a complicated semantic network with WATER at the center. These six metaphors are NATURE IS

WATER, LIFE SUSTAINER IS WATER, MOVEMENT IS WATER, POWER IS WATER, PURITY IS WATER, and WOMAN IS WATER. I go through these metaphors in turn.

3.1. Nature Is Water

To speakers of Chinese, water is the most important element of nature. The well known idiom—one of the first things that a school pupil hears in her geography class—for instance, states: “三山六水一分田” ‘three mountain six water one portion land’, meaning 30% of nature—the earth’s surface, to be more exact—is mountains; 60% of it is water, and 10% of it is cultivatable land. As a result, the concept of WATER has been metonymically extended to the concept of NATURE, as can be attested by the existence of a large number of idioms, proverbs, and phrases in the Chinese language. The most common type is one in which the words 山 ‘mountain’ and 水 ‘water’ coexist to refer to nature. The phrase 山山水水 ‘mountain mountain water water’, for instance, means simply “nature.” More specifically, MOUNTAIN and WATER are used to stand for scenery, as the following tokens suggest:

(19)

绿	水	青	山
clear	water	green	mountain

‘beautiful scenery’

(20)

山	青	水	秀
mountain	green	water	limpid

‘picturesque scenery’

Although they seem to be about the sight of mountains and water, (19) and (20) are everyday phrases used to describe scenery in general—any beautiful scenery, either with or without a mountain or a body of water in it.

Just as MOUNTAIN and WATER, two major parts of nature, are used to stand for nature and scenery, specific mountains and rivers can stand for a specific place or locale:

(21)

巴	山	蜀	水
Ba	mountain	shu	river

‘natural environment in Sichuan’

The mountain 巴山 and river 蜀水 are located in Sichuan Province. When one uses (21) however, one is not speaking about the mountain or the river literally mentioned, but the geographical area of the province in which the mountain and the river are located. Similarly, 白山黑水 ‘bai mountain hei water’ is the metonymy for Heilongjiang province and 三湘四水 ‘three Xiang four water’, for Hunan Province.

Further, consider (22) and (23):

(22)

穷	山	恶	水
poor	mountain	evil	water

‘unfavorable natural surroundings’

(23)

残	山	剩	水
incomplete	mountain	remaining	water

‘damaged nature/environment (by a war or natural disaster)’

Token (22) can mean an environment unfit for agriculture, with barren land, strong winds, or without sufficient rainfall to sustain crop growth, or an environment unfit for any other life-sustaining activities. Token (23) may refer to a general devastation of a place by a war or a disaster—not only the physical aspect of it, but other aspects such as the life conditions of its people, even their psyche. This further extension of meaning is also seen in the kind of adjectives that are used to modify the nouns 山 ‘mountain’ and 水 ‘water’: words such as 穷 ‘poor’, 恶 ‘evil’ (22) 残 ‘incomplete’, and 剩 ‘leftover’ (23) are mostly modifiers of non-physical and often abstract entities, as the English glosses suggest.

If water and mountain are the two things standing for nature in general in the Chinese mind, *water* and *fire* combined—水火—stands for an environment of adversity, as illustrated in (24) and (25).

(24)

水	深	火	热
water	deep	fire	hot

‘an abyss of suffering’

(25)

水	火	之中
water	fire	within

‘in extreme misery’

The target domains of these two tokens are not physical or natural, but abstract and man-made: The suffering and the misery in these phrases often refer to the general conditions of life of the masses as a result of exploitation or other forms of cruelty by the ruling class. But the experiential basis for the mapping is clear: Water, a significant part of nature, can cause hardship as well as pleasure; it can sustain life as well as destroy it.

The foregoing discussion suggests that the extension of WATER to NATURE is primarily metonymy-based. The WATER FOR NATURE metonymy then gradually becomes less metonymical and more metaphorical along the metonymy/metaphor continuum.

3.2. Life Sustainer Is Water

If water is considered the most important part, and hence a symbol, of nature, as I demonstrated in the previous section, it makes sense for Chinese speakers to treat water as a life sustainer. Like the extension of WATER to NATURE, the WATER to LIFE SUSTAINER mapping is done both metonymically and metaphorically. I start with cases of metonymies. In (26), MOUNTAIN and WATER stand for the food grown and produced in them, respectively:

(26)
 靠 山 吃 山 靠 水 吃 水
 Near mountain eat mountain. near water eat water
 ‘Those living in a mountain live off the mountain; those living near water live off water.’

The relevant metonymy is PLACE (IN WHICH THINGS ARE PRODUCED) STANDS FOR THINGS.

Water is not only a source for food that sustains life; it is itself an essential life sustainer, hence the metonymy WATER STANDS FOR ESSENTIAL LIFE SUSTAINER. For instance, beans, 菽, are the primary grain in Northern China, which explains why, in (27), the combination of 菽 and 水 stands for a life of bare necessities:

(27)
 啜 菽 饮 水
 eat beans drink water
 ‘live on bare necessities’

Similarly, 菽水 in (28) describes a state of poverty, as a life on beans and water alone is a life of no luxury:

(28)
 菽 水 承 欢
 beans water carry pleasure
 ‘poor but filial’

What about Southern China, where the primary food is rice instead of beans? Predictably, 水 ‘water’ and 米 ‘rice’ combined refer to what the combination of 水 and 菽 does for Chinese speakers in the north.

Token (29), for instance, implies that if one has not touched water or rice, one has not eaten anything:

(29)
 水 米 没 粘 牙
 water rice not touch teeth
 ‘having eaten nothing at all’

As is the case with the WATER to NATURE extension, the WATER to LIFE SUSTAINNER extension itself goes through a metonymy-to-metaphor process. Consider (30):

(30)
 斗 升 之 水
 gallon pint of water
 ‘insignificant financial resources’

斗 and 升 are small volume units for measuring grain. Token (30) therefore refers to the scarcity of financial resources. This can be viewed as a metaphor with a metonymic motivation: Since water is such an essential life-supporting substance and hence standing for it (metonymic relation), it is further extended to financial resources in general, as (30) can be said without any reference to water.

3.3. Movement Is Water

To the Chinese mind, water is a symbol of change, as is seen in a popular saying:

(31)
 山 不 转 水 转
 Mountain not moving water moving
 ‘Mountain is stationary; water is ongoing’

This metaphor is used to speak about the didactic nature of stability versus change: Some things in life are stable and others are ever changing and evolving. Since water is such a prominent element of nature, its attribute of fluidity serves as a natural (in both senses of the word) motivation for the metaphor MOVEMENT IS WATER.

Token (32) is based on the MOVING TRAFFIC IS MOVING WATER metaphor, whereby flowing water and flying dragons create an image of non-stopping heavy traffic.

(32)
 车 水 马 龙
 vehicle water horse dragon
 ‘Vehicles are like flowing water and horses are like flying dragons’

In (33), 水 refers to life-supporting materials:

(33)
 细 水 长 流
 small water long flow
 ‘Careful spending makes resources last longer.’

This token maps the moving nature of water to a simple principle of financial management: If one controls the flow of water, the water will run longer; if one controls spending, the resources will last longer. Hence what underlies (33) seems to be the metaphor (RUNNING) ECONOMIC RESOURCE IS MOVING WATER.

The movement of water can be smooth. The smoothness of flowing water has hence been transferred to a number of specific sub-domains. Token (34), for instance, invites us to see the smoothness and naturalness of a writer's prose style in terms of flowing water (SMOOTH STYLE IS MOVING WATER).

(34)

行 云 流 水

Floating cloud flowing water

'(a style of writing that is) smooth and natural, like floating clouds and flowing water'

When it comes to oratorical skills, it is the forcefulness of the movement of water that is mapped to the target domain, motivating the metaphor ELOQUENCE IS RUSHING WATER:

(35)

悬 河 泻 水

hanging river rush water

'fluent and eloquent like rushing water'

悬河 'hanging river' refers to a body of water that experiences a sudden drop of elevation, such as a waterfall. The movement of water in a "hanging river" is hence forceful, as indicated by 泻水 'rushing water'. Thus, unlike (34), which stresses the smoothness of moving water, (35) foregrounds its characteristics of rhythm, forcefulness, and voluminousness.

As we have seen in this section, the super target domain of MOVEMENT consists of sub-domains that differ from each other in two ways.

First is the *kind* of things: there is traffic; there is financial resource; there is prose style; there is eloquence.

Second, the different aspects of water's movement have been captured to motivate these seeming disparate set of metaphors: its constancy, its smoothness, and its unstoppableity.

3.4. Power Is Water

Flowing water generates power. Hence the metaphorical extension of WATER to MOVEMENT could be an intermediary between the source domain of WATER and the target domain of POWER. I start with (36), a well-known scholarly phrase:

(36)

水 可 载 舟 亦 可 覆 舟
 Water can carry boat, too can overturn boat
 ‘Water can keep a boat afloat; it can also overturn it’

This saying talks about the two aspects of the power of the masses: They can topple a ruling class as well as support it. The token as a whole maps WATER to MASSES, under which are a number of sub-mappings: GOVERNMENT IS BOAT; SUPPORTIVE POWER OF MASSES IS SUPPORTIVE POWER OF WATER; DESTRUCTIVE POWER OF MASSES IS DESTRUCTIVE POWER OF WATER. Further, the DIRECTION OF MASSES’ WILL IS THE DIRECTION OF THE WATER FLOWING. So, if the government goes with the masses’ will, it will be supported by the masses. Otherwise, it will be overthrown by the masses.

Unlike (36), which invokes the image of power in its sheer force—a boat is overturned mostly by water moving with high speed due to the difference of elevation in its bed or to violent waves caused by air turbulences—(37), below, is motivated by water’s power of persistence:

(37)

水 滴 石 穿
 water drip stone chisel-through
 ‘Constant dripping of water chisels through a rock’

Under what seems to be the overarching metaphor EFFORT IS WATER, small amounts of effort are seen as drops of dripping water that is usually inconsequential in a short period of time.

However, if the effort is consistently applied, it will lead to success in the same way dripping water “chisels through a rock.”⁵

The power of water is also seen as being capable of making things happen naturally. Token (38), for example, speaks of a goal being achieved because its external conditions are met:

(38)

水 到 渠 成
 water arrive channel appear
 ‘Where water arrives, a channel is formed’

In other words, EXTERNAL CONDITION (FOR GOAL) IS WATER; CHANNEL IS GOAL. Since the flowing of water makes a channel without effort—via its natural flowing—this token is used to dispense the wisdom that one should not force things to happen.

Now, consider the following that speak to the destructive power of water:

⁵ Note that there is an equivalent saying in English: Constant dripping wears a stone. While the English version also speaks to water’s persistence, the verb, wear, lacks the sense of power and volition that are present in its Chinese counterpart, 穿 ‘chisel through’.

(39)

洪	水	橫	流
flood	water	over	flow

‘Evil prevails’

The destructive power in the target domain EVIL is mapped onto water out of human control in the source domain FLOOD.

Token (40) combines FLOOD with BEASTS to denote awesome power:

(40)

洪	水	猛	兽
flood	water	savage	east

‘frightful disasters’

Instead of flood, (41) depicts disasters in terms of sea water:

(41)

海	水	群	飞
sea	water	together	fly

‘great turmoil’

Again, the motivation for these phrases appears to be the out-of-control-ness of water.

3.5. Purity Is Water

To the naked eye, water is transparent and colorless. These two characteristics could be the motivation for WATER to be extended to the domain PURITY. Tokens for this extension fall into three kinds: those that describe beauty, those that describe the heart, and those that describe friendship. I start with tokens that describe beauty:

(42)

水	灵
water	clever

‘beautiful and bright’

(43)

水	汪	汪
Water	full	full

‘bright (and intelligent) eyes’

These two expressions can only be used to describe pre-teen children (possibly also adolescents in some dialects). The sense of beauty thereby conveyed is not only looks—general appearance in (42) and eyes in (43)—but also, and more importantly, the innocence

that is seen in a young person, untainted by adult desires and complications. Hence the metaphor that underlies these two expressions is BEAUTY OF PURITY IS WATER.

How can the heart be a target domain of WATER, then? The answer may lie in the transparency of water. Hence there exist tokens such as (41), motivated by the metaphor (CLEAR) HEART IS WATER:

(44)

白	水	鉴	心
white	water	reflect	heart

‘heart as clear as water’

The last sub-domain of PURITY, friendship, is illustrated by (44):

(45)

淡	水	交情
thin	water	friendship

‘friendship as clear and transparent as water’

In a Chinese context, such a “thin-water” friendship is one that is built on mutual admiration, respect, and loyalty. It is “thin-water” because there is no need to consolidate it through the exchange of material goods. The phrase 君子之交淡如水 ‘Friendship between gentlemen is like water’ and many other similes support this PURE FRIENDSHIP IS (THIN) WATER metaphor.

3.6. Woman Is Water

The metaphorical extension of WATER to WOMAN seems to have its basis in the Taoist *yin yang* dichotomy, as both water and woman belong to *yin* (as opposed to mountain and man, their respective *yang* counterparts). In (46), the phrase 弱水 ‘soft water’ refers to women in general:

(46)

弱	水	三	千	我	只	取一瓢	饮
fragile	water	three	thousand	I	only	take one-cup	drink

‘Among so many women, I only choose/need one to love.’

which instantiates the metaphor WOMAN IS SOFT WATER, linked by a correspondence between the soft texture of water and the perceived softness and fragility of a woman.

Autumn water, 秋水, is believed to be water of the most limpid kind. The phrase 秋水 is therefore used to refer to the eyes of a woman, particularly in sayings like (46):

(47)

望	穿	秋	水
gaze	wear-out	autumn	water

‘Long gazing with expectation (for her man’s return) wears out a woman’

Or to the woman herself:

(48)

秋	水	伊	人
autumn	water	nice	lady

‘Nice ladies are limpid water’

Next, WOMAN is mapped onto WATER and MAN to FISH via the relationship between water and fish. Consider (49), in which the wife is referred to as water and the husband, fish:

(49)

鱼	水	和	谐
fish	water	together	harmony

‘harmony of husband and wife’

This expression is partially motivated by the extension of WATER to LIFE SUSTAINER. In our discussion of that extension (Section 3.2), life refers to all forms of life. In (49), the life sustaining characteristic of water is specified into the immediate essential environment for fish: While non-maritime life relies on water primarily for hydration, fish relies on water for respiration because of its anatomy (breathing through the gills rather than the lungs).

If (49) invokes the image of the close relationship between fish and water and the reliance of the former on the latter, (50) invokes more of an image of fish swimming in water:

(50)

鱼	水	之	欢
fish	water	of	merriment

‘merriment of a man and/in a woman’

This expression is a standard euphemism for the sexual relationship or a sexual encounter between a man and woman. Its sexual meaning is arrived at via an invitation to think about 鱼 ‘fish’ as being inside 水 ‘water’. To anticipate our discussion below, (50) also reflects sexism: If the merriment of a sexual encounter is mapped to the swimming of fish in water whereby fish enjoys far more “merriment” than water, who the “beneficiary” of such a relationship is supposed to be is obvious.

Token (51) further illustrates the belief that women are the object of enjoyment for men:

(51)

山 温 水 软

Mountain warm water soft

‘The mountains are warm and the water is soft’

The adjectives 温 ‘warm’ and 软 ‘soft’, particularly when used together in a phrase like (51), ascribe attributes to a woman’s body. Another such phrase is 温香软玉 “warm fragrance and soft jade,” referring to the warmth and fragrance the woman’s body is supposed to provide. The expression in (51), therefore, has come to refer to a sensually intoxicating environment, most often one in which a man gets “lost”—losing his will and ambition. Quite clearly, (51) is also motivated by the extension of WATER to NATURE discussed in Section 3.1, as a sensual environment such as a woman’s body can be seen as the extension of nature through analogy: Woman’s body is to sexual enjoyment as water is to nature.

Token (52) is used to describe a woman’s promiscuity:

(52)

水 性 杨 花

water feature poplar flower

‘changeable and floating characteristics’

A promiscuous woman is seen in terms of water because water has no fixed home—it flows freely and “guiltlessly” to wherever lower in elevation—and it has no shape of its own—it takes on the shape of any container it happens to be in. She is also a poplar flower because poplar flower, due to its light weight, flies everywhere in breeze.

If the sexist nature of the previous examples is striking, (53) is more so, as it simply *states* that women are trouble, a manifestation of the metaphor BEAUTY IS DISASTROUS WATER:

(53)

红 颜 祸 水

rosy cheek disastrous water

‘beauty is the source of disaster’

which is related to examples motivated by the destructive power of water I discussed in Section 3.3. Chinese history records several instances whereby an emperor indulged himself in a beauty and neglected his governing duties, leading to the suffering of his subjects and the demise of his empire. These failures are attributed to the temptation by women, as is clearly suggested by (53).

4. SUMMARY DISCUSSION

In Section 2, I discussed how the WATER radical functions to organize Chinese words into a network of networks in the orthography. In Section 3, I referred to Nie and Chen [2008], demonstrating how the notion of WATER has been extended to six target domains via six super metaphors at the level of phrases. These two networks, however, are networks of the same super-network, a web of notions connected together at different levels, via different motivations, and on different dimensions, but all based on the notion of WATER. This has been the first aim of the present paper.

The significance of discovering this complicated network of networks goes beyond the the discovery itself. It offers us much about the architecture of language, particularly the relationship between language on the one hand and the mind and society on the other. The foregoing discussions, for instance, have demonstrated how words with WATER radicals and phrases with 水 are motivated by a host of factors, some ontological, some perceptual, some grammatical, while others societal. Although these factors interconnect, interact and may even intertwine to a point where things are difficult to sort out, there seems to have emerged a general trend. At the level of the radical, motivational factors appear to have more to do with the interaction of speakers with the physical world. At the level of phrase, societal factors—social practices, history, and cultural values—begin to exert themselves.

At the outset of the paper, I indicated that the present study will raise issues about Chinese morphology and morphology. The heart of these issues, to reiterate, is a discrepancy between two received motions. On the one hand, linguists recognize the value of the radical in the Chinese orthography. On the other hand, they do not assign any linguistic status to the radical. The radicals, for instance, are not seen as morphemes, although they have identifiable meanings or functions, for the sole reason that they are part of the orthography, and orthography is viewed as no more than a record of language, not the language itself.

However, the fact that the radical represents meaning or function probably should not be brushed off thus easily. After all, radicals *are* units of the Chinese word, helping the (literate) speaker to organize their lexicon. True, the existence of the radical does not have psychological reality in the mind of the illiterate. But—allow me to sound unduly argumentative—the radicals were first designed by none other than those who did *not* read or write: Most certainly, there was nobody who could read or write without an orthography to read or write in! Moreover, what would we as linguists say when most if not all speakers of Chinese become literate? I have no answer to these or any other related questions. I only believe they are important for the study of Chinese and encourage interested colleagues to ponder: “What are the radicals doing in the Chinese language?”

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Chapter 73

CONSTRUAL OPERATIONS OF THE ENGLISH PROGRESSIVE CONSTRUCTION

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ABSTRACT

The progressive construction has a tripartite symbolic structure in which the auxiliary verb symbolically links up with the meaning component of TENSE, the main verb with the expressed SITUATION, and the present participial realization of the main verb with the aspectual category of IMPERFECTIVITY. The present paper focuses on each of these symbolic links and their interplay, and investigates the meaning construction processes involved in the symbolic structure of the progressive construction. Drawing on Croft and Wood's [2000] model of construal operations—revised in Croft and Cruse [2004: 40–73]—the present paper provides an overview of construal operations that are likely to be at play in the construction of the aspectual and actional meaning components of the progressive construction. The discussion also involves instances of the progressive construction, which display low semantic compatibility, as the ensuing semantic coercion involves a number of construal operations that are revelatory to the meaning construction of the progressive in general.

Keywords: aspect, Aktionsart, coercion, construal operations, construction grammar

1. INTRODUCTION

The primary function of the English progressive construction is to express imperfective aspect. It is well known that aspect is a matter of completion or incompleteness of the situation expressed by a sentence, and that, while the perfective aspect adds a sense of completion to the situation in question, the imperfective aspect adds a sense of ongoingness. While the

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progressive construction itself has received a lot of attention, both in terms of its form and semantics as well as in terms of its historical development and grammaticalization, there are not many systematic studies of the semantic processes of meaning construction associated with it.

The present paper investigates the English progressive construction in the perspective of cognitive linguistics and construction grammar so as to provide an overview of its meaning components and the semantic processes involved in the construction of its content. The central theoretical concepts in the present discussion are construal (which, in cognitive linguistics, is held to be the central ingredient in linguistic meaning constructing),¹ construal operations (which are the processes involved in the construction of linguistic meaning), and the notion of grammatical constructions as central symbolic units of language. The main premise of the present discussion is that constructional meaning, like lexical meaning, is construed and that certain construal processes are conventionally associated with constructions. Drawing on a model of construal operations proposed by Croft and Wood [2000; Croft and Cruse 2004: 40–73], I suggest a number of specific construal operations that are likely to be involved in the meaning constructing of the English progressive construction.

The present article is structured as follows. The notions of construal and construal operation are explained in section two, while section three sketches out the idea of the grammatical construction as a conventionalized semiotic unit in language. This is essentially the usage-based take on construction grammar associated with Croft's [2001, 2005] Radical Construction Grammar, in which constructions are meaningful and functional holistic units that emerge in the grammatical system through use in discourse. In sections four and five, I discuss the meaning components and meaning constructing associated with the English progressive construction, suggesting a set of construal operations that are likely to be conventionally associated with the progressive construction. Section five focuses on instances of the progressive construction that involve semantic incompatibility between the main verb and the construction itself. Such incompatibility calls for reconstrual of the verb such that it conforms with the semantics of the construction, and such reconstrual provides some very useful hints as to which processes of meaning constructing are likely to be associated with the construction.

2. CONSTRUAL OPERATIONS

2.1. Construal and Meaning Constructing

Construal is an essential ingredient in meaning constructing and draws upon encyclopedic knowledge and psychological processes of interpretation and conceptualization [e.g., Croft and Cruse 2004: 40–73, 141–163; Croft and Wood 2000; Fillmore 1977, 1982; Langacker 1987, 1991; Talmy 2000a, 2000b; Verhagen 2004] rather than upon a repertoire of specifically linguistic concepts and rules. While construal has to do with meaning, Langacker [1993: 447] argues for a distinction between content and construal since expressions with the

¹I use the term “meaning constructing” with reference to what is traditionally called “meaning construction” so as not to create unnecessary confusion about the terms “(grammatical) construction”, “construal”/“construing”, and “meaning construction”.

same content may display differences in semantics, because they construe the content differently. This is reflected in, for example, voice alteration where the active and passive impose different perspectives on the situation in question, without actually changing the expressed state-of-affairs, but there are also cases in which differing construals of the situation result in differences that go beyond mere perspectivization. Countability and uncountability, for instance, may result in very different construals of otherwise similar scenarios, as in *There was a cat on the road* versus *There was cat on the road*. The former contains an indefinite article which signals countability and thus refers to the cat as one unit with clearly defined demarcations, while the latter, which makes use of a zero-article and thus signals uncountability, construes the cat as a mass-like entity, probably referring to the remains of a road-killed cat.

What allows for the construal of the cat as an intact cat is that certain grammatical expressions, such as the indefinite article, numerals, and plural forms, are conventionally associated with construal processes that conceptualize the nominal referent as a clearly demarcated unit which can be differentiated from its surroundings and others of its kind. On the other hand, the non-intactness of the cat in the second example is attributable to the use of zero-articles with singular forms which in English is conventionally associated with construal processes that conceptualize the referent of the noun phrase in question as a mass-like entity with weakly defined, or non-defined, internal and external boundaries. Linguistic convention is not just a matter of certain semantic content being associated with certain linguistic forms; it is also a matter of certain construal processes that have become associated with linguistic expressions through frequency of use, and this is what results in a sense of stability in the symbolic relation between form and content and also allows for dynamism and variation between different instances of occurrence of the same linguistic unit.

2.2. Croft and Wood's Model of Construal Operations

Construal is a dynamic constructive process and involves a plethora of mental operations, and, since linguistic meaning is a matter of construal, en- and decoding involves processes which are similar, or even identical, to processes that are involved in general human cognition [Croft and Wood 2000: 52-53, 55]. The following section provides an overview of such processes, or construal operations, drawing mainly on the inventory of operations proposed by Croft and Wood [2000] and revised by Croft and Cruse [2004: 40-73], which in turn draws on the conceptual systems proposed by Fillmore [1977, 1982], Lakoff [1987], Lakoff and Johnson [1980], Langacker [1987, 1991] and Talmy's [2000a].

There are four main categories of construal operations, each of which represents a basic cognitive ability pertaining to a specific area of experience (attention/salience, judgment/comparison, perspective/situatedness, and constitution/gestalt) which will be described in the following sections. These will be explained in the following sections.

2.2.1. Attention/Salience

Attention/salience covers construal operations that relate to one's ability to establish, maintain, and shift one's attention and distribute one's focus on various details of a scene.

Selection is a type of an attention-related construal operation, which draws on the ability to focus one's attention towards one or more parts of a scene, while removing one's attention

from other parts which are not, for whatever reason, salient. The selected part is profiled [Langacker 1987: 118] while the rest of the scene is gapped [Talmy 2000a: 259]. The gapped parts do not disappear, they are just outside the immediate scope of attention. Selection is mainly deployed in cognition through the profiling, or selection, of certain parts of a cognitive model, such as the type of structure that Fillmore [1977, 1982] refers to as a semantic frame and what Langacker [1987, 1993, 2001a, 2001b] calls a domain or a base.² A frame is a cognitive structure which is based on patterns of recurring experiences in interacting with the world and organizes concepts that are experienced together into a holistic structure:

By the term 'frame' I have in mind any system of concepts related in such a way that to understand any one of them you have to understand the whole structure in which it fits; when one of the things in such a structure is introduced into a text, or into a conversation, all of the others are automatically made available. [Fillmore 1982: 111].

Profiling is ubiquitous in language, and most lexemes in a lexical field based on a semantic frame profile various parts of that frame. For instance, the nouns *buyer* and *seller* profile the main AGENTIVE roles in the COMMERCIAL TRANSACTION frame, while the verbs *cost*, *sell*, and *charge* profile relations and perspectivize acts in the frame [Croft et al. 2001].

Metonymy is another type of construal operation which involves selection: the most salient part of a scenario is selected such that it represents the entire scenario. We see this in the morphological process of conversion of nouns into verbs without derivational affixation, in which the referent of the noun in question is profiled and used with reference to the entire activity, the referent being deemed the most salient part, as in *The crowd were bottling the band*, in which the INSTRUMENT, the BOTTLES, is profiled and then promoted to being the representative of that entire situation. Metonymy is closely related to the primary psychological process of *pars pro toto* in which a part of an entity or scene is perceived as being identical to that entity or scene [Jacobsen 1971: 20] and may even be an instance of that process.

Attention/salience also covers the ability to take a fine-grained view or a coarse-grained view on the scene or parts of the scene, the ability to dynamically scan the scene or to statically view it in its entirety, and the ability to construe a static scene dynamically through fictive motion. There are two types of scanning [Langacker 1987: 144–146]: summary scanning (the construal of a dynamic scene in its entirety as a holistic entity without internal temporal relations) and sequential scanning (the construal of a scene as an event, or a series of events, unfolding in conceived time). Linguistically, scanning depends on choice of word class and both inflectional and derivational morphology: finite verbs and verb phrases scan the expressed situation sequentially while deverbal nouns and noun phrases scan it summarily as in *Boston Bridge collapsed* versus *the collapse of Boston Bridge* [Langacker 1987: 144–146]. In the former, a temporal relation is imposed on the collapse of the bridge such that it is construed as an event that unfolds 'step by step' along a linear time-line from the inception of the collapse to the point when the bridge has collapsed completely, while in the latter there is no such temporal relation.

²For the sake of simplicity, I shall stick primarily to Fillmore's model of frame semantics in the remainder of this paper.

2.2.2. Judgment/Comparison

Judgment/comparison covers construal operations that compare experiences in terms of similarities and differences, such as operations of categorization and figurative comparison like metaphor and simile. Construals of judgment/comparison are likely to be related to the primary psychological process which Jacobsen [1971: 19] refers to as the principle of similarity being equal to identity, according to which similarities between two experiences may be so salient that the experiences in question are perceived as being, if not identical, then at least members of the same category.

Perhaps surprisingly, figure-ground alignment [Rubin 1915] is listed in Croft and Wood's [2000: 62] model of construal operations under judgment rather than perspective, but, as they argue, referring to Langacker [1987: 121–122], figure-ground alignment is based, not only on perspective, but primarily on the comparison of parts of the scene in question in terms of salience such that a part that is considered salient stands out as the figure, while a part that is considered non-salient serves as the ground.

2.2.3. Perspective/Situatedness

Perspective/situatedness covers construal operations that allow individuals to relate to the scene or context they find themselves in; in essence, the construals of perspective/situatedness construct the scene, its relations, and the situatedness of the conceptualizer (including the relation, or state, of existence itself) and relate to “the philosophical notion of our situatedness in the world in a particular location—where location must be construed broadly to include temporal, epistemic and cultural context as well as spatial location” [Croft and Cruse 2004: 58].

An important mental ingredient in situatedness is what Langacker [1987: 122–123] calls viewpoint:

For many types of conception—particularly those grounded in visual experience—the importance of viewpoint is self-evident. We can look at a physical object from different sides (front/back, top/bottom, etc.), and what we actually see varies accordingly. In observing a complex scene with multiple participants, we can assume different positions in relation to them, with direct consequences for their perceived proximity and salience. The effects of variable viewpoint on actual (peripherally connected) visual experience are duplicated in autonomous processing (i.e., visual imagery); thus I can close my eyes and visualize what an object looks like when seen from different angles. [Langacker 1987: 122–123].

Closely related to viewpoint is deixis, which covers those units of language that situate the discourse in context. Croft and Wood's [2000] model includes deixis as a matter of construal, classifying the traditional deictic categories (person deixis, temporal deixis, spatial deixis) as spatiotemporal deixis. In addition, common ground is included as a category under deixis, called epistemic deixis, which covers construals that relate the discourse to the shared, or presumably shared, cultural, social, mental and encyclopedic contexts. Deictic construals establish, or draw on, perspectives in the context of the discourse with the communicative situation itself, or the deictic center, as the view point.

Empathy is also included as a type of perspectival construal, which allows the speaker to latch on to various participants in the scene and empathize with them. An important factor in

perspectival construals, and specifically in empathy, is what Langacker [1993: 451] calls mental transfer, “in which the conceptualizer imagines (or at least takes into account) how the scene appears to some other observer”, thus allowing the speaker to construe a scene in the perspective of a vantage point that does not correspond to the speaker’s own origo, or deictic center.

Finally, subjectivity and objectivity are listed as perspectival construal operations in Croft and Wood’s [2000] model, and are defined by Langacker [2001a: 25] as follows:

In both perception and conception, entities are construed with varying degrees of subjectivity/objectivity. As I understand these terms, an entity is construed objectively to the extent that it is onstage as a focused object of viewing. It is construed subjectively to the extent that it remains offstage as the implicit subject of viewing.

2.2.4. Constitution/Gestalt

Constitution/gestalt covers construal operations that interpret the constitution of entities in terms of both their shape and physical, temporal and other features as well as their internal and external topological, meronomic, and geometrical structures. The construal operations of constitution/gestalt thus conceptualize an entity as a holistic unit or as a non-unit, and even chains or series of dynamic actions as constituting one event, and represent “the most basic level of *constituting* experience and giving it a structure or a *Gestalt*” [Croft and Wood 2000: 67, italics in original]. This sort of construal involves structural schematization, which specifies the structure of entities and their components. Among other things, structural schematization allows for the individuation of an entity in terms of boundedness. Individuation is pivotal in, for example, the distinction between countable and uncountable nouns, since countable nouns in the plural, such as *leaves*, refer to multiple individuated entities, while uncountable nouns, such as *foliage*, express masses of non-individuated material. From Croft and Cruse’s [2004: 63] reference to Talmy [2000a: 47–68], I understand that the many factors of configurational structure in Talmy’s system are considered construal operations of individuation in Croft and Wood’s [2000] model of construal operations. Talmy’s categories of configurational structure, which are discussed in neither Croft and Wood [2000] nor Croft and Cruse [2004], are listed here.

Plexity is whether an entity consists of just one element, in which case we speak of uniplexity, or multiple equal elements, in which case we speak of multiplexity. Plexity is at play in grammatical number, as the singular form construes the referent as uniplex, and the plural form construes it as multiplex. The process of multiplexing is the construal process behind multiplex construals. Plural forms are but one type of expression that is conventionally associated with multiplexing; another example of a multiplexing construction is the catenative verb construction, as in *She kept sighing* [Talmy 2000a: 48]. The reverse process whereby uniplex units are construed is called unit excerpting [Talmy 2000a: 49] and is associated with singular forms and measure phrase constructions, as in *furniture* versus *a piece of furniture*.

Boundedness has to do with the construction of boundaries for the entity in question. The processes behind boundedness and unboundedness construals are called portion excerpting (or bounding) and debounding respectively [Talmy 2000a: 51–52]. One type of construction which is associated with portion excerpting is the preposition phrase structure [*in* NP_{EXTENT-OF-TIME}] as in *She dressed in five minutes*, which sets up a bounded period of time

[Talmy 2000a: 51]. Measure phrases can also be used to construe bounded units as in *a cup of water*.

State of dividedness is the internal segmentation of an entity, which may be composite or continuous. A composite entity is one whose internal structure involves breaks or interruptions, while a continuous one is one whose structure is not fragmented in any conceivable sense. The mental process of discretizing interprets otherwise continuous entities as composite. The opposite process is called melding [Talmy 2000a: 56]. According to Talmy [2000a: 56], there may be no overt grammatical means of discretizing or melding in English, but certain lexical forms, such as *particles* in the measure expression *particles of water*, can break down the referent into aggregates of smaller components, while lexical expressions such as *walk* and *breathe* refer to activities that meld together smaller actions (*walk* refers to a series of steps, and *breathe* to a series of inhalation-exhalation sequences). Melding also seems to be a matter of degree [Talmy 2000a: 56–57], with lexically melding forms like *walk* and *breathe* construing entities that display a higher degree of continuity than cases where some additional linguistic material do the melding, as in *masses of leaves* versus *foliage*. *Foliage* can be grouped with the verbs *walk* and *breathe* as expressions that evoke what Talmy [2000a: 56] calls spontaneous melding.

The degree of extension of an entity covers its extension in space or time, or both. There are three categories here: point (which takes up so little space or time that it cannot be perceived as an extent at all), bounded extent (which takes up a perceivable amount of time and space, but which is also delimited by a boundary), and unbounded extent (which is an infinite quantity). These categories are linguistically reflected in the lexemes *speck*, *ladder* and *river* respectively [Talmy 2000a: 61]. The mental process of reduction [Talmy 2000a: 62] allows for the adoption of a distal perspective in which the referent is construed as bounded and reduced in degree of extension while magnification allows for the adoption of a proximal perspective in which the referent is construed as unbounded and the degree of extension is increased. For example, *She climbed the fire ladder* construes the situation as a bounded extent delimited by the bottom and the top of the fire ladder, while *Moving along on the training course, she climbed the fire ladder at exactly midday* construes the climb up the ladder as being point durational seen against the backdrop of all the activities on the training course, and *She kept climbing higher and higher up the fire ladder as we watched* construes it as an unbounded extent [Talmy 2000a: 61–62]. As these examples show, the categories of boundedness and degree of extension are intertwined, and how they also depend on viewpoint location and proximity.

The category of pattern of distribution refers to the internal structure of events, and is essentially Talmy's [2000a: 63] version of *Aktionsart* [e.g., Bache 1997: 231–243, Bache and Davidsen-Nielsen 1997: 191–195; Croft MS: §2]. Talmy's categories are one-way nonresettable, one-way resettable, full-cycle, multiplex, steady-state and gradient actions. All of Talmy's categories correspond to categories that have been extensively investigated, and labeled, in the study of *Aktionsart*. A one-way nonresettable event corresponds to an irreversible telic punctual process, while the one-way resettable event corresponds to a reversible one. The full-cycle category corresponds to a reversible process, which is one that automatically resets to the initial state-of-affairs, and the multiplex process corresponds to an iterative process. The steady state situation corresponds to a state, and the gradient category corresponds to a non-punctual telic or directed process. The importance of Talmy's contribution to *Aktionsart* is that it places *Aktionsart* under the rubric of structural

configuration and thus allows for the analysis of the expression of events through language in terms of constitution/gestalt.

The axiality of an entity covers its scalar properties, and axiality could thus be included under Croft and Cruse's [2004: 65] grouping of construal operations relating to scale. For instance, many gradable adjectives express an attribute which can be conceptualized in terms of an axis or a scale of degree. There are also lexical sets, or semantic fields, which pertain to a semantic frame whose basic structure as a scalar one, such as *poor*, *wealthy*, *rich* and related lexemes. The category of scene partitioning has to do with the conception of an entire scene in terms of its parts and participants. Scene partitioning is captured in Croft and Wood's [2000] model under the category of force dynamics along with Talmy's [2000a: 509–549] systems of force dynamics and causation.

In addition to Talmy's categories, many of the laws and principles of gestalt formation discussed by gestalt psychologists Koffka [1935] and Köhler [1947] may be included as construal operations, or construal factors, under the heading of structural schematization. Constitution/gestalt also subsumes relationality, or entity/interconnection, covering construals of the relational and non-relational properties of the entities in question.

2.2.5. *Construal Co-Operation*

Construal operations are held to co-operate, as it were, such that the constructing of one meaning component involves not just one, but several construal operations. We shall see this in relation to the construction of imperfectivity, which involves several construal operations. As hinted at, the construal-based view of meaning implies that one goes beyond what is traditionally considered linguistic meaning, taking a broader perspective on the relation between communication and cognition, such that meaning subsumes:

- (i) both established and novel conceptions; (ii) not only abstract or intellectual 'concepts' but also immediate sensory, motor, and emotive experience; (iii) conceptions that are not instantaneous but change or unfold through processing time; and (iv) full apprehension of the physical, social, and linguistic context. [Langacker 2001b: 252].

If one buys into this view of meaning, the construal operations in meaning construction of any type of linguistic unit are cognitively complex processes that draw on general cognitive processes and structures.

3. GRAMMATICAL CONSTRUCTIONS AND THE PROGRESSIVE CONSTRUCTION

One of the basic tenets of cognitive linguistics and usage-based linguistics is that linguistic meaning is not as such encoded in any fixed way in the linguistic signs of the language system, but rather construed online in discourse in accordance with the general principles of human cognition. Construal in linguistic communication is subject to constraints in the contexts in which discourse takes place, including discursive conventions [Croft and Cruse 2004: 141–192; Cruse 2000a, 2000b, 2002].

It is convention that contributes stability to the linguistic system in the sense that, through patterns of regular use, certain construals become associated with certain linguistic signs via various processes of conventionalization. With Croft and Wood's [2000] model of construal operations in mind and the central role which construal is given in meaning, conventional linguistic meaning involves sets of construal operations that are conventionally associated with the linguistic form in question, such that interlocutors will arrive at similar contents whenever they use the same linguistic form.

It is not just lexemes and morphemes that express conventional meaning, so do grammatical constructions. In construction grammar [e.g., Fillmore et al. 1988; Goldberg 1995; Croft 2001], constructions are not just functional units in grammar, but also basic units of language. The present discussion of the English progressive construction is essentially a constructionist one, my focus being on the relationship of meaning constructing between the form of a construction and the semantics of instances of the construction in use. The main premise of the present discussion is the basic tenet of construction grammar that constructions are pairings of form and conventional meaning which, like other semiotic units, are entrenched in the speech community in question. The relationship between form and meaning is held to to essentially be the same as with lexical and morphological units, and constructional meaning is constructed in accordance with the same principles as lexical and morphological meaning. Constructions may be simple, consisting of just one unit (and, in that sense, lexemes and morphemes are also constructions), or complex, consisting of more units. Complex constructions can be compositional such that each of the units a complex construction consists of may express its own meaning component, forming an intraconstructional symbolic unit, but it cannot be reduced to primitive, independent meaning atoms [Croft 2001: 47].

Based on the observation that constructions, like lexemes, express semantic content, construction grammarians have gone as far as posing a lexicon-syntax continuum [Croft 2001: 17; Goldberg 1995: 7] to replace the Generativist idea of lexicon and syntax being two separate components of language with only syntax being considered part of grammar. The English progressive construction is a complex construction, consisting of a form of *BE*, as the auxiliary verb, and a main verb in the present participial form. The auxiliary verb *BE* specifies tense in finite instances of the progressive construction, while the present participle form of the main verb expresses the imperfective aspect.

The lexeme that takes up the main verb function specifies the imperfectivized situation itself. The basic progressive construction has three main semantic areas: TENSE, IMPERFECTIVE aspect and the SITUATION itself. Each of these areas contains a number of semantic units that are essential to the overall meaning of the English progressive construction, and each enters into semantic linkage with a formal element. Thus, *BE* forms a symbolic unit with TENSE, while the verb itself forms a symbolic unit with the SITUATION component and the morphological realization of the main verb as a present participle links up with the component of IMPERFECTIVITY. If Croft and Wood's [2000] model of construal operations is applied to constructional meaning, constructions, like lexemes, will be conventionally associated with construal operations. This means that each meaning component of a complex construction involves a set of construal operations.

4. CONSTRUCTING THE MEANING OF THE PROGRESSIVE CONSTRUCTION

4.1. Imperfectivity

As opposed to a perfective one, an imperfective situation has not been completed or terminated, but is still ongoing or progressing. As Bache [1997: 271] notes, “[w]ith the perfective aspect, one thus gets a sense of situational *completeness* whereas with the imperfective aspect one gets a sense of situational *progression*” (italics in original). Bache [1997: 269] himself suggests that aspect is a matter of applying a situational focus to the event, and that grammatical subcategories of aspect correspond to different patterns of inclusion of parts into, and exclusion of parts from, the situational focus. In Bache’s approach, imperfectivity consists in a situation being viewed such that its INCEPTION and TERMINATION are excluded from the situational focus, while the MIDDLE PHASE, in which the situation unfolds, is included. This is a matter of attention/salience, since one directs one’s attention to the MIDDLE PHASE of the event in question, gapping the INCEPTION and TERMINATION.

Bache’s [1997] situational scope corresponds to profiling in Langacker’s work and Croft and Woods’ [2000] model of construal operations. Aspect, I believe, involves a generalized semantic frame of the situation structure. This generalized event frame, or aspectual frame, which is specifically associated with the progressive construction has been described to some extent by Suzuki [1996: 267–268], who further describes it as a gestalt which is more basic than the parts it consists of, and in a specifically constructionist perspective by Michaelis [1998].

The aspectual frame has a simple structure, as it consists of the three said phases, and is conventionally associated with aspectual constructions in general. The semantic difference between the English aspectual constructions lies in different profiling patterns. The English progressive construction, through convention, profiles the MIDDLE PHASE, while the perfective profiles all phases. In addition, it could be argued [Michaelis 1998: 84–87] that constructions like [*START/BEGIN to V*] and [*BEGIN V-ing*] express the inceptive aspect in which the INCEPTION is profiled. Likewise, an expression like [*STOP V-ing*] could be argued to express a terminative aspect in which only the TERMINATION is profiled.

Given that verb phrases express events through the propositional act function of predication [Searle 1969: 22–53; 77–96; 97–127], the semantic content of verb phrases that relates to the internal structure and mechanics of the SITUATION, is prototypically not stative but dynamic. Consequently, the English progressive construction, which is of course a verb phrase construction, involves dynamic attention in the form of sequential scanning. Sequential scanning of an event is the interpretation of a situation as unfolding over perceived time, and it seems logical to assume that, in order for a process to be construed as ongoing, it should be dynamically unfolding over time.

Rather than operating with the definitions of perfectivity as equalling dynamicity and imperfectivity as equalling stativity, as proposed by Langacker [1987: 254–257], I shall, following Bache [1997] and Bache and Davidsen-Nielsen [1997: 194–196], separate aspect from actionality, or *Aktionsart*, and operate with them as two different, but related, categories. Aspect is primarily a matter of viewing specifications, while stativity and dynamicity

are considered *Aktionsart* categories having to do with the inner mechanics and make-up of situations. As it happens, stativity and dynamicity are the superordinate categories within *Aktionsart*:

The primary ontological division in this hierarchy [the inventory of *Aktionsart* categories] has an epistemological basis: states are those situations whose existence can be verified on the basis of a momentuous 'sample', while event verification requires tracking over time. [Michaelis 2004: 63].

The main distinction among *Aktionsarten* falls between states and events, or processes, and, in the framework of the present discussion, these do not equal imperfectivity and perfectivity, although, as we shall see, aspect and *Aktionsart* are closely related.

The progressive construction involves not only construal operations of attention/salience, but also of constitution/gestalt, since, as I have just suggested, the attention-based conceptualizations impose certain construals of constitution upon the event itself. One could argue that the progressive construction involves gestalts at a basic semantic level, in that the aspectual frame could be described as a gestalt, whose parts are functionally defined from the whole they appear in [Suzuki 1996: 167–168]; this is also very much in line with Fillmore's [1982: 111] holistic definition of semantic frames. In that respect gestalt is unavoidable as a semantic factor, but that is not the constitution/gestalt-related issue I am going to discuss here, as I shall focus on construals of the situation itself.

There is one constitution/gestalt construal that is invariably imposed upon the event by the progressive construction, which logically follows from the profiling of the unfolding MIDDLE PHASE, and gapping of the INCEPTION and TERMINATION. Given the exclusion of the INCEPTION and TERMINATION from the situational focus, the progressive construction construes the event in question as an unbounded one, since those phases serve not just as parts of the event, but also demarcate it from whatever comes before and after it; in that sense, they are situational boundaries. Consider the following examples:

- (1) a. But oh we were told about the war and what was happening between the Germans and
whatnot. (BNC HEC 154).
- b. Yes but you see at this time the girl took up her tea tray and, and when she took, she
knocked on the door and when she opened the door the Manageress was lying on
the
floor foaming at the mouth, she'd had a heart attack. (BNC HDJ 286).
- c. When you are talking to a teacher in school, you speak and act in a different way
from when you are talking to your friends out of school. (BNC G3P 3015).

The sentences in (1a) and (1b), which contain the past progressive, express situations that are in progress at the point in the past at from which they are viewed. The sentence in (1c) contains two instances of the present progressive, both of which present the situation of talking in a specific way as ongoing at the present moment. The situation in (1c) is a generic, universally true, one, but it construed as if it were a specific more tangible process. In all three examples, the situations are not bounded by the INCEPTION and TERMINATION, because

these are outside of the situational focus. There is no overt mention of how what was happening with the Germans in (1a) was initiated or terminated, and, in (1b), we are told nothing of how the manageress ended up lying on the floor, or how her lying on the floor was terminated (although we can infer from the mention of her heart attack that she must have fallen). In (1c), we are given an *in medias res* perspective on two situations of talking with no overt mention of the initiation or termination of the two generalized conversations.

Bounding is, as Langacker also points out, one of the main semantic distinguishing features that separate imperfectivity from perfectivity [Langacker 1987: 258–262]. As Langacker [2001b: 259] states, “[i]ntuitively, we can describe the progressive in terms of ‘zooming in’ and taking an ‘internal view’ of a bounded event. Technically, I describe it as imposing an immediate scope that excludes the endpoints of the perfective process.” While the profiling of the MIDDLE PHASE logically results in the construal of the situation as unbounded, the INCEPTION and TERMINATION do not disappear from the cognitive landscape, as they are still present in the scope of attention of the situation (and, if the imperfective situation has natural inception and termination points, then they can be inferred, and might even be considered presuppositions).

The scope of attention is defined by Langacker [1987: 118] as “those portions of a scene that it specifically involves”, and can easily be accessed and profiled by other construction in the same discourse. Scope of attention is also listed as a construal operation of attention/salience in Croft and Cruse’s [2004: 50–51] revised version of Croft and Wood’s [2000] model of construal operation, and they describe its relation to selection thus: “The second aspect of attention is that the focus of attention—what is being selected—is surrounded by a scope of attention, that is, a periphery of consciousness where entities are accessible to attention” [Croft and Cruse 2004: 50, boldface in original]. In the progressive construction, the entire aspectual frame forms the scope of attention of the profiled MIDDLE PHASE and the INCEPTION and TERMINATION of the process, while excluded from the situational focus through gapping, are still present in the scope of attention. They are retrievable through discourse as illustrated by the following example (which is not from the corpus):

- (2) When I entered the room, they were still talking. They kept talking till the sun came up and then they went to bed, having discussed politics since noon.

The progressive *were talking* presents the conversation as being in process and imposes the imperfective profiling pattern upon it. While never overtly expressed, the TERMINATION of the conversation can be retrieved via *till the sun came up*, which implies that the conversation was terminated at that point, while the understanding of the adverbial clause *having discussed politics since noon* draws on the INCEPTION.

The occurrence of the presupposition-triggering catenative verb construction [KEEP V-ing] in *kept talking* also draws on the presence of the INCEPTION in the scope of attention, as it presupposes that the process has already been initiated. In addition to selection and bounding, and as a logical consequence of these, viewpoint proximity is also involved in the meaning constructing of imperfectivity in that, in order to take the internal view that focuses on the MIDDLE PHASE and excludes the two other phases, one must adopt a proximal perspective, which the perfective profiling pattern, which has all three phases in the situational focus, requires the adoption of a distal perspective.

Another constitution/gestalt-related construal which seems to invariably apply with the progressive construction has to do with degree of extension, as the situation is set up as a durative one. Durative situations correspond to bounded and unbounded extents. Punctual situations, situations which correspond to Talmy's notion of a point, are too brief for there to be identified as containing MIDDLE PHASES. Therefore, when verbs that usually express punctual situations are used with the progressive, they are reconstrued into displaying a perceptible degree of extension [see also Givón 1993: 153–160]:

- (3) a. Yeah, come down with the stairs to chap, young chap, I told you he's knocking on the door, it must of been then. (BNC KBE 9765).
- b. Nicholas Ferrar died in 1637. As he was dying, he urged the family to continue in "the good old way" of the primitive Church which they had revived together. (BNC CFF 939).
- c. Oh, excuse me a minute, my little chaplain is jumping up and down, splattering the parchment with ink. (BNC H90 2291).

All three verbs in the examples in (3) typically predicate acts which are temporally brief, or punctual, but, in (3), they appear in the progressive construction, and, thus, in (3a) and (3c), the otherwise punctual situations of knocking and jumping are reconstrued as temporally extensive iterative series of repeated knocking and repeated jumping, while, in (3b), the punctual process of dying is expanded into a durative situation in which the process of changing from being ALIVE to being DEAD is presented as a gradual one.

4.2. Tense

Tensed instances of the progressive construction involve a set of construal operations which are essentially independent of the imperfective aspect, as tense and aspect are two separate grammatical and cognitive categories; tense construals apply to any tensed verb phrase and not just the progressive construction, aspect (being a question of profiling and gapping phases of the internal mechanics of the situation) is primarily a matter of attention/salience and constitution/gestalt while tense is a matter of perspective/situatedness, the primary function being the location of the situation in time relative to the communicative situation [e.g., Michaelis 1998: 2]. Aspect is the relation of the event or some part of it to its own internal temporal progression, while tense is its relation to the temporal environment in and around the discourse. Since tense, after all, contributes to the overall meaning of a tensed instance of the progressive construction, I will briefly account for construal operations in the meaning constructing of tense here.

Given that tense undoubtedly draws on temporal deixis [Comrie 1985: 14; Lyons 1968: 305, 1977: 677–690], tense is a construal of perspective/situatedness and falls under Croft and Wood's (2000) category of spatiotemporal deixis. Langacker [2001b: 260] emphasizes the deictic nature of tense and its relation to the situatedness of the discourse situation itself:

I describe a tense marker as imposing an immediate temporal scope which is located with respect to the time of speaking (unlike the immediate scope imposed by the progressive). In particular, past tense specifies that this immediate scope is prior to the time of speaking, while the present tense (at least in English) specifies that it precisely coincides with the time of speaking.

This is cognitively analogous to looking at the visual physical context; that is, looking backwards, forwards and at one's own location, which seems to be supported by the TIME IS A MOVING OBJECT and TIME IS STATIONARY AND WE MOVE THROUGH IT metaphors of English [Lakoff and Johnson 1980: 42–44] both of which involve a linear conceptualization of time in English.

I would further suggest that temporal deixis involves a more or less engrained cognitive structure that structures the linear experience of time, which is a quite simple frame consisting of the linearly related concepts PAST, PRESENT and FUTURE. In addition to being linearly structured, the cognitive structure is, as suggested by Ota [1963: 19], also a gestalt:

“Now” is either the moment of speaking or any length of time including the moment of speaking and flanked by the past and the future. These two conditions are necessary to define “now”; if the timespan does not include the moment of speaking, it is not “now”, and if it is not in contrast with the past and the future, it becomes timeless.

This frame is applied in the construal of time and imposes temporal relations upon the external world, and perspectivizes the context temporally with the now as the temporal deictic center.

Tensed verb phrases simply profile the relevant part of the frame such that past tense verb phrases profile the PAST component of the frame while present tense ones profile the PRESENT component and future indicating verb phrases profile the FUTURE component. In the English progressive construction, the imperfective event is located in a period in time that corresponds to the profiled part of the temporal frame. On this definition, the perspectivizing situatedness of temporal deixis interplays with selection from the domain of attention/salience.

4.3. The Situation Itself

As we have already seen, the English progressive construction imposes construals of constitution/gestalt upon the situation expressed by the main verb in terms of boundedness and degree of extension. What about the structural schematization of the event itself?

While to some extent specifying *Aktionsart*, or, in Talmian terminology, patterns of distribution, the English progressive construction does not as such contribute greatly to the scene partitioning, or force dynamics, of the event, since such details are specified by the main verb in conjunction with the argument structure.

Boundedness and degree of extension have counterparts in Talmy's [2000a: 63] system of patterns of distribution, as the punctual situation, a point in the system of degree of extension, corresponds to a one-way situation (a temporally brief one) while gradient situations (non-punctual telic ones) correspond to bounded extents in the degree of extension system, and steady states correspond to on unbounded extents.

I have already argued that the English progressive imposes construals of extension, or durativity, and unboundedness upon the situation, while the perfective, in contrast, construes the situation as bounded, as it includes the *TERMINATION* phase in the situational focus. There is another relevant construal operation from the system of patterns of distribution. The progressive construes the event as a dynamic one, and, consequently, steady states are not expressed by the English progressive construction. The logic here is quite clear: an imperfective situation is one which unfolds through time and is construed as ongoing; in a steady state, there are no changes, and, since the main relation is a static one, there is nothing going on in a steady state, and, since nothing is going on, it cannot be construed as ongoing. Thus, the progressive construction actually has one *Aktionsart* specification in terms of force dynamics, albeit a minute one: there has to be some sort of energy input and some sort of *AGENTIVE* role to provide the dynamics that enable the situation to be unfolding and construable as ongoing. The other patterns of distribution, such as cyclicity, reversibility, multiplexity and so on, are fairly irrelevant to the English progressive construction as such, but some of them do come into play in cases where the main verb does not conventionally express the same semantic situational details as the construction does.

As a minor point, it should be mentioned that the progressive construction, like all other verb phrase constructions, specifies the entity/interconnection of the predicated event as a relational one, since situations predicated by verbs set up relations between entities in the scene, which are referred to by nominal sentence arguments.

4.4. Construal Operations and Symbolic Structure

The English progressive construction contains three symbolic links, each of which combines a formal element with a semantic component. The auxiliary *BE* links up with the semantic component of *TENSE*, while the main verb, through lexical specification, links up with that of the situation itself. The morphological specification of the main verb as a present participle links up with the semantic component of *IMPERFECTIVITY* [see also Kirsner and Thompson 1976: 216-7; Verspoor 1996: 438].

Each of the three semantic components is established through meaning constructing and involves a number of construal operations which are conventionally associated with the progressive construction. The present discussion has focused on these construal operations, which can now be related to the overall symbolic structure of the progressive construction.

The attention/salience-based construal operations of profiling, scope of attention and dynamic attention as well as viewpoint along with the constitution/gestalt-based construal operation of boundedness are associated with the symbolic relation between the present participial realization of the verb and the semantic component of *IMPERFECTIVITY*. The imperfective aspect is constructed through profiling of the *MIDDLE PHASE* in the aspectual frame while the *INCEPTION* and *TERMINATION* phases are gapped, but still retained in the scope of attention and may be retrieved or profiled at any point during the discourse. Moreover, the sequential scanning of the process presents it as unfolding over time and thus allows for the construal of it as ongoing. As a consequence of the profiling of the *MIDDLE PHASE*, the process is unbounded, since the *INCEPTION* and *TERMINATION* are in essence the parts of the process that serve as the boundaries of the process. This viewing arrangement presupposes proximity between the viewpoint and the event.

The constitution/gestalt-based operations of degree of extension, patterns of distribution and force dynamics as well as relational entity/interconnection all apply to the construal of the event itself when expressed in the progressive construction and thus relate to the symbolic link between the main verb and the semantic component of the SITUATION. Given that the process has to be temporally extended for the aspectual frame to be applicable, it has to display a considerable degree of extension. Likewise, in order for the situation to be construed as unfolding over time and thus sequentially scanned, there has to be some sort of dynamicity to it, and thus the pattern of distribution has to be a non-stative one, and, in terms of force dynamics, there has to be some sort of AGENTIVE role to provide an energy input. Boundedness, which follows as a consequence of imperfectivity is of course also a matter of the constitution/gestalt of the SITUATION itself, and, consequently, there is an internal non-monadicity [Bache 1997: 159-166] in the symbolic structure of the progressive construction, as there is symbolic linkage between both the lexical main verb itself and its present participial realization through the operation of unbounding. Through the verbal propositional act function of predication [Searle 1969: 22-53; 77-96; 97-127], the progressive construction also specifies relational entity/interconnection.

Finally, the component of TENSE involves temporal deixis, which belongs in the realm of perspective/situatedness, and, if one buys the idea of a temporal frame that structures the experience of time, also profiling.

5. CONSTRUAL OPERATIONS AND COERCION IN THE PROGRESSIVE CONSTRUCTION

The construal operations of the progressive construction are especially evident in instances of the construction occurring with semantically incompatible verbs that undergo coercion in order to become semantically more similar to the construction.

5.1. Coercion

Coercion is perhaps best understood in relation to semantic compatibility which is when there is semantic overlap or lack of mutual semantic conflict between an expression and the linguistic context in which it occurs. Thus, there is semantic compatibility between a word and the construction it appears in if there is semantic overlap, or lack of mutual conflict, between the conventionalized meaning of the word and the conventionalized meaning of the construction. Semantic compatibility is a matter of degree: the higher the degree of compatibility between a word and a construction, the higher the probability of the word appearing in that construction [Stefanowitch and Gries 2005: 4]. Coercion arises in cases of low semantic compatibility and is a type-shifting process whereby the nature of a linguistic unit is altered such that the degree of compatibility between the unit and the context, in this case the construction is increased [e.g., de Swart 2003; Francis and Michaelis 2003; Michaelis 2003, 2004]

Constructional coercion is thus a process of reinterpretation in which the word in question is reconstrued in accordance with the semantics of the construction and the

semantic constraints that the construction imposes upon words that appear in it. As Michaelis [2004: 49] points out, coercion serves as a sort of conceptual resolution to semantic conflicts:

Grammatical constructions refer in the same way that words do: they denote types—among them classes of entities and events. Accordingly, coercion is not merely the resolution of a semantic conflict but it is instead the resolution of conflict between constructional and lexical denotata.

More specifically, the conflict is resolved in accordance with what Michaelis [2003: 10, 2004: 51] calls the Override Principle which states that “if a lexical item is semantically incompatible with its syntactic context, the meaning of the lexical item conforms to the meaning of the structure in which it is embedded”. The syntactic context semantically overrides the lexical item, coercing it into becoming semantically compatible with the construction in which it occurs. Instances of constructional-lexical coercion are often interesting in that identifying the loci and types of coercion can reveal details of the construal operations that are at play in a given construction in general.

5.2. Construal and Coercion Patterns in the English Progressive Construction

A verb that is incompatible with the English progressive construction is one that does not display the semantic features that characterize the progressive construction; that is, it is a verb that does not conventionally express durativity and dynamicity, and, consequently, the aspectual frame does not readily apply.

We saw that in example (3) in which *knock*, *jump* and *die* were changed from expressing punctual situations into expressing temporally extended, or durative, ones via the English progressive construction. This semantic conversion is quite clearly a case of coercion of the semantics of the verbs so they fit into the semantics of the progressive construction.

5.2.1. Verbs of Punctuality

The type of situation that is perhaps the most obviously incompatible with the English progressive construction is the punctual situation, or, in Talmy’s [2000a:63] terminology, the one-way situation—that is, a temporally non-extended situation. Despite the semantic incompatibility, verbs that conventionally refer to one-way situations do appear in the progressive construction and undergo coercion as seen in (3) above and (4) below:

- (4) a. The edges of her mouth were flickering, as if miniature hearts beat there.
(BNC C86 4288).
- b. She had called up the hall: "Yours ears are flapping, Mr O'Brien!" (BNC GVT 2017).
- c. The next moment I was on the floor and one was kicking me and the other was hitting me in the face. (BNC CS4 1338).

In (4a), the verb *flicker* appears in the progressive construction, and it typically refers to either a brief flash of light that lasts only for a moment or a brief and sudden small movement. This is not a type of temporally extended event. Nor is the situation expressed by *flap*, which, when not in the progressive construction, predicates a quick vertical or horizontal movement. Likewise, *kick* and *hit* typically refer to abrupt striking movements. Compare the examples in (4) to *The edges of her mouth flickered, as if miniature hearts beat there; She had called up the hall: Yours ears flapped, Mr O'Brien!*; and *The next moment I was on the floor and one kicked me and the other hit me in the face*, in which the progressive has been substituted with the simple past. The most likely readings of these are that the edges of her mouth flickered once, that Mr O'Brien's ears flapped once, and the the narrator of was kicked once and hit once in the face, because the simple past tense does not, unlike the progressive construction, have any construal operations of constitution/gestalt associated with it through convention. In contrast (4) expresses a series of flickers, several flaps of Mr O'Brien's ears, and several kicks to the narrator's body and hits to his face. As with (3a) and (3c), the punctual events have been iterated into series of identical processes such that the iterative series themselves are construed as main processes. The iterative series is temporally extended and displays durativity, making it compatible with the aspectual frame.

In Talmy's [2000a: 63] system of patterns of distribution, there are two types of one-way situation: the resettable one and the non-resettable one; the former is one that returns to its original state and the latter is one that cannot be reset to its original state. Croft [MS §2] makes a similar distinction between reversibility and irreversibility. The examples in (3a), (3c) and (4) are instances of coercion of a resettable punctual verb appearing in the progressive construction, while (3b) and the following examples in (5) are instances of non-resettable, or irreversible, punctual verbs in the progressive construction:

- (5) a. She was breaking an egg into a curl of boiling, salty water—the top of the big coal range glowed under a copper saucepan. (BNC H7H 203).
- b. We were winning 3–0 when I woke up. (BNC J1G 407).
- c. So the day had come, and she was accepting it very calmly. (BNC H7P 1015).

The breaking of an egg is a punctual event which occurs when the shell is broken, and it is non-resettable in that when an egg is broken, it cannot be unbroken. Likewise, the winning of a game itself is punctual, as a game is only won at the very moment that it is finished, and the process of accepting something, while it may require a lot of preceding thought and consideration, is in itself punctual, I would say. In any case, winning a game and accepting something are both non-resettables since a game does not normally revert from being won to being in its original state from before it was over, and, although, one can change one's mind eventually, the resultant state of the process of accepting something is not identical to the initial state. In (3b), death itself is punctual (although, of course, there may be several states and events leading up to the moment of death) and it certainly is non-resettable. However, in (3b) and in (5), these otherwise non-resettable punctual event verbs appear in the progressive construction and are coerced into durative processes which are compatible with the aspectual frame.

Either type undergoes its own specific pattern of coercion into a durative event, resulting in slightly different construals.

When a resettable one-way verb appears in the progressive construction, it is coerced into an iterative situation which can then be imperfectly construed. This coercion process involves a number of construal operations of structural schematization within the sphere of constitution/gestalt. To describe these construal operations, it is necessary to draw on Talmy's [2000a: 47–86] categories of configurational structure. The one-way resettable process is replicated through the operation of multiplexing. On Talmy's [2000a: 48] definition, multiplexing is all that is required in order to create a iterative process from a one-way process, but I would argue that the perception of something as a multiplex gestalt itself also involves melding. The operation of multiplexing merely replicates the event into several identical ones, but it is the operation of melding that allows one to view all of these replicated events as one gestaltic process and not merely a number of identical but mutually discrete events. So, through multiplexing, the events of flickering, flapping, and kicking and hitting in (4) and jumping and knocking in (3a,c) are replicated into several identical instances of each event, and, though melding, each set of multiply replicated types of event is construed as a coherent chain, or series, of iterated events. It should be mentioned that iterative processes, while gestaltic, are *per se* less continuous than proper durative ones because there are still breaks between each of the replicated events. Nevertheless, the events are construed as forming a series, or chain, and are thus perceived as a unit which is discrete from its context, suggesting that state of dividedness is a continuum ranging from discreteness to continuity. So, through multiplexing and melding, an iterative multiplex event is construed which consists of a holistic and semi-continuous series of replicated resettable one-way events. In terms of degree of extension, the event is coerced from being a point into an extent, but whether it is construed as a bounded or unbounded in terms of telicity is, as such, irrelevant to the progressive construction because of the gapping of the INCEPTION and TERMINATION. Having been coerced into an extent, the iterated process can now be subjected to the construal operations associated with the progressive construction, since it is now durative enough for the aspectual frame to be applied such that a MIDDLE PHASE can be set up and profiled, constructing an unbounded and ongoing event.

With non-resettable one-way events, coercion also results in an extended process, but with some notable differences in gestaltic structure. An important difference is that the non-resettable one-way event, unlike the resettable one, is not replicated and iterated. Iteration is logically impossible, because iteration of an event presupposes that it returns to its original state so that it can be repeated. This is not possible with non-resettables since their resulting states are considered permanent. The coercion process involves an operation in which the events leading up to the one-way non-resettable itself are included into the event, extending it such that the original non-resettable one-way event is reconceptualized as the termination or completion of the extended event. The main coercive process is likely to be melding, such that the events leading up to the non-resettable one-way event and the event itself are melded into one continuous event whose resultant state equals the resultant state of the original one-way event. Unlike coercion of resettable one-way event verbs, non-resettables are coerced into fully continuous events with no perceivable breaks at all between them. While the iterated events discussed above is only somewhere in between composite and continuous, non-resettables are coerced into fully continuous ones. Whereas telicity was irrelevant in the type of coercion discussed above, a non-resettable one-way event is construed into what Talmy [2000a: 63] calls a gradient action which is durative and telic. The outcome of this sort of coercion is more specifically a bounded extent whose boundaries are specified by the

initial and the resultant states. More specifically, the original one-way non-resettable constitutes the endpoint of the event. For example, death, which is a punctual event, is, in (3b) expanded such the situations and states that Nicholas Ferrar goes through leading up to his death, are melded with the actual point of death into one continuous process in which the change of state that is death simply functions as the endpoint of the TERMINATION phase. Similar processes of expansion through melding apply to the events in (5). Having been coerced into an extended gradient action, the event can now be construed imperfectly through application of the aspectual frame and profiling of the MIDDLE PHASE. When construed imperfectly, the MIDDLE PHASE coincides with the events originally leading up to the one-way non-resettable event but the non-resettable event itself is not included which means that when such verbs appear in the progressive construction, the change to the resultant state is typically not in the situational focus, and it may indeed not even take place. For instance, in (3b), *was dying* does not express the actual moment of death, but rather some stage in the process leading up to the moment of death, and similarly in (4a), *was breaking* refers not just to the moment of breaking of the shell of the egg, but to the processes leading up to it (and, in this case, probably also the events after the breaking of the egg, as its contents spill into the boiling water). In (4b), *were winning* expresses, not the moment of victory, but some stage of the game in which the narrator's team were leading the game 3–0, leading up to the victory but not constituting it, and (4c) refers, probably not to the acceptance itself, but to the processing, thinking and considering that take place prior to the acceptance itself. Thus, in such cases, “the progressive form describes a runup process before the achievement of the change of state” Croft [MS §2.2.2].

These two types of coercion of non-durative verbs into durative ones further support the claim that the progressive construction is conventionally associated with construal operations of degree of extension and requiring the event in question to be an extent in order for it to be construed imperfectly. These construal operations of schematic configuration are thus associated with the progressive construction independently of the verbs it appears with; had these features been associated with the verbs and not the construction, the progressive construction would either not occur with punctual verbs in the first place or coercion would not take place at all.

5.2.2. *Verbs of Stativity*

According to Borg [1998: 96–7], relational verbs never appear in the progressive construction, while mental and sensory verbs sometimes do; this more or less represents the view of many grammarians of English. In their corpus-based description of English grammar, Biber and colleagues [1999: 471] present findings that seem to confirm these constraints. However, Biber and his coauthors also show that relational stative and stative-like verbs do appear in the progressive, as in the following *being*-examples in and the *having*-examples:

- (6) a. The Hon. Gentleman is being rather longwinded. (BNC HHV 9751).
 b. He's being most kind. (BNC GV2 3501).
 c. All right, so maybe she was being unreasonable. (BNC H7W 3659).
- (7) a. Someone who doesn't want a meal but just wants a drink but all the rest of the people are having a meal. (BNC F7A 981).
 b. We are having to fight hard, to save our hospitals. (BNC H4A 101).

- c. A platoon from B Company were having their own shooting competition with the Canadians and Germans. (BNC A77 1895).

Many linguists who take into account usage patterns in naturally occurring language are aware of this [Greenbaum and Quirk 1990: 55–56; Leech 1971: 22–29; Stefanowitsch and Gries 2004: 230–231], and they also make the observation that such verbs typically adopt a more dynamic meaning in the progressive construction, which means that coercion is involved. This type of coercion can be described quite simply: “The activity feature ‘wins out’ over the stative feature of the input lexical item” [Michaelis 2004: 75].

This is one of the reasons why the examples in (6) can be somewhat oxymoronically described as dynamic states. The activity feature of the progressive in all three examples in (6) adds a sense of, not only temporariness, to *BE*, but also a sense of the state in question essentially being the result of behavioral activity by the referent of the subject. Thus, the state of longwindedness in (6a) is temporary because it follows from the behavior of the subject as perceived by the speaker. Similarly, the kindness in (6b) is more of a description of the behavior of the referent of the subject in at the moment, and Polly’s state of being unreasonable³ can also be argued to follow from her behavior. Indeed, taking into account the co-text, one will typically find that the behavior itself is described, as is the case of the example in (6c), which is presented in a larger portion of textual context below:

- (8) "Not stopping at Ibiza must have helped," Polly said drily.

The lift of one dark brow told her he recognised the gibe. Turning his back on the receiver, he folded his arms and leaned against the chart table. "So, what did you think of the market?"

Relieved that he had decided not to respond to her deliberately provocative remark, Polly was, at the same time, irritated. All right, so maybe she was being unreasonable. But it just seemed that he held all the cards, he made all the decisions. That wasn't true either. She made a wry face. (BNC H7W 3659).

Prior to the sentence in (6c), the text describes Polly’s provocative behavior towards the other characters in the narrative and also her feeling irritated. So, the sentence in (6c) is as much a description of her interaction with the other characters and her feelings towards them as it is a description of a state that she is in.

Similarly, the instances of the progressive in (7) impose a much more dynamic construal upon *HAVE* than its typical semantics of state of possession. The situation of having a meal in (7a) can hardly be said to be a state at all, which also applies to the situation of having a shooting competition in (7c). Example (7b) is a bit different, because it involves the semi-modal construction [*HAVE* to V], which typically describes a state of necessity or obligation, depending on whether it is epistemic or deontic. It is interesting that the activity feature even wins out over the stative feature of semi-modals and actually modifies the modal meaning into being a necessity that applies at the very moment as the referents of the subject are actually engaged in fighting to save the hospitals.

³ Interestingly, the adjectives longwinded, kind, and unreasonable could be argued to express attributes which are themselves derived from patterns of behavior.

The result of the coercion in (6) and (7) is sometimes referred to as a temporary state, understood such that it is essentially a stative relation between the participants in the situation but not a permanent state. However, Michaelis [2003: 75] argues that temporary states “are in fact not states but homogenous activities”. A homogenous activity is a process which appears stative and steady as no change of state appears to be going on, but this apparent stativity is caused by equal strength in the energy input of the AGENT and the force relations among the participants in the situation. Stative verbs that appear in the progressive construction do not express states at all but are coerced into actually expressing processes that involve force dynamic tension, but may not display any perceptible internal changes of state.

Central to this type of construal is reinterpretation of the force dynamic relations otherwise involved in the state that is conventionally expressed by the verb in question, such that the otherwise stative relations among the participants are replaced by dynamic ones of energy input which do not cause changes of state, maybe because the participants are equally strong opposing forces which hold each other in place rather than causing changes in one another, because the AGENTIVE participant holds the other participants in place, or because our encyclopedic knowledge simply informs us that the situation in question is an activity although it appears to be a state, as is the case of activities like sleeping or holding one’s breath [Michaelis 2004: 75]. With this reinterpretation of force dynamics follows a reinterpretation of patterns of distribution in that the SITUATION is changed from a steady state into a durative atelic process, which is absent from Talmy’s [2000a: 63] system, but accounted for by Croft [MS §2] as an activity and by Bache and Davidsen-Nielsen [1997: 191–195] as a self-contained process. The terms ‘activity’, ‘self-contained process’, or ‘durative atelic process’ all refer to an extended dynamic situation which does not progress towards a point of completion but may at any time be terminated, and, upon termination, the participants will revert to their initial states, or enter states which are not natural or logical or necessary outcomes of the process in question. These coercion patterns of the progressive construction obviously adhere to Michaelis’ [2003: 10; 2004: 51] Override Principle. Michaelis [2004: 68] also proposes another principle in *Aktionsart* and aspectual coercion, which she calls *Aktionsart* Preservation which states that, “in an aspectual mapping, whether implicit or explicit, input and output types must share some portion of their respective causal and/or temporal representations”. *Aktionsart* Preservation is closely related to, and perhaps even derived from, the Override Principle.

Certainly, in relation to the progressive construction, it seems that the coercion patterns are the direct results of the semantics of the progressive construction overriding the *Aktionsart* semantics conventionally associated with the verb in question. The progressive construction imposes a constitution/gestalt construal of durativity upon the situation in question so that the aspectual frame can be applied and the middle phase selected; thus, the progressive construction, as mentioned above, comes with an actional, or *Aktionsart*, specification of durativity. When punctual verbs appear in the progressive construction, they are coerced into different kinds of durative ones such that the durativity is preserved. Thus the progressive construction preserves its most central *Aktionsart* by overriding the *Aktionsart* semantics of the main verb.

CONCLUDING REMARKS

The main purpose of the present discussion draws in part on the basic tenet of construction grammar which holds that constructions are semiotic units that combine form and content, or meaning or function, and in part on the principle from general cognitive linguistics that linguistic meaning is a matter of construal, and involves mental processes, which apply not only in meaning constructing but also in general human cognition.

There is a certain logic, I think, to the combination of these two tenets of language and cognition, and its locus is the principle of the syntax-lexicon continuum. If constructional and lexical units are essentially semiotic units whose only main difference is that of internal complexity, then constructional meaning should be subject to the same meaning constructing processes and principles as lexical and morphological meaning. Therefore, it should be possible to describe constructional content in terms of the same construal operations that apply to lexical and morphological meaning.

I have attempted to provide an admittedly tentative, and non-exhaustive account of the possible meaning constructing processes of the English progressive construction, and, drawing on Croft and Wood's [2000, Croft and Cruse 2004] model of construal operations, I have suggested a number of construal processes that are likely to be part of the meaning constructing of the progressive construction. Dividing the semantic content of the progressive construction into three major components (the IMPERFECTIVE aspect, the SITUATION itself and TENSE), I accounted for the construal operations involved in each of these components. The component of IMPERFECTIVITY, that is the conception of the situation as an ongoing one, draws on a number of construals from the realm of attention/salience, the central one being the profiling of the MIDDLE PHASE of the aspectual frame while gapping the INCEPTIVE and TERMINATIVE phases by leaving them out of the situational focus. This is a relatively simple operation and most likely a central one in general human cognition and perception, which has, in different terminologies, been described extensively in the literature on aspect. The progressive construction also imposes a number of construals, primarily ones of constitution/gestalt upon the SITUATION itself. Firstly, the SITUATION is construed as unbounded by virtue of the inceptive and terminative phases being gapped. Secondly, the SITUATION is construed as a durative one displaying a high degree of extension; otherwise the aspectual frame with the MIDDLE PHASE profiled cannot be applied. Thirdly, while the exact nature of the force dynamics of the SITUATION is unconstrained, there is some sort of AGENTIVE role involved which provides some type of energy input that causes the situation to be a dynamic one that unfolds over time and can be scanned sequentially. Consequently, another construal operation of constitution/gestalt that applies is the specification, within the system of pattern of distribution, of the situation as a non-stative one. The discussion of coercion of verbs appearing in instances of the progressive construction, but which do not readily match the constructional semantics seems to support the idea that at least those five constitution/gestalt construals are conventionally associated with the progressive construction. Finally, although this has been presented as a minor point, TENSE is relevant to the progressive construction inasmuch as tensed instances of the progressive construction involved temporal deixis, which falls under the realm of construal operations of perspective/situatedness. In this respect, I mentioned the possibility of a temporal frame that

structures our general perception of time, and that tense might involve the profiling of parts of that frame.

The main premise that constructional meaning, like other linguistic meaning, is a matter of construal and can be accounted for in terms of construal operations, such as those in the model proposed by Croft and Wood (2000), is, I would argue, or should be considered, an important principle in those branches of construction grammar that seek to relate constructional form and meaning to human cognition.

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Chapter 74

THE PRONOUN *It*: A STUDY IN COGNITIVE GRAMMAR

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ABSTRACT

This paper explores two fundamental tenets of Cognitive Grammar (CG) with reference to the meaning of the English pronoun *it*. One tenet is that all linguistic elements posited in language have conceptual (semantic) import. On the basis of this tenet, I argue that the pronoun *it* is meaningful and its multiple senses can be characterised in terms of a prototype: a central sense from which other senses are somehow derived. The other tenet is that the meaning of a construction, as reflected in its particular morphosyntactic organisation, evokes a particular construal (imagery) imposed on its content. On the basis of this tenet, I argue that a construction containing the pronoun *it* is motivated by the construal of scope: the array of conceptual content, narrow or broad, which the speaker chooses to characterise an expression. In a narrow scope which is represented by a non-extraposed construction, the speaker considers a minimal range of content in describing the situation. In a broad scope which is represented by an extraposed construction, the speaker considers a maximal range of content in describing the situation. The speaker's ability to construe a situation in a variety of ways is considered a key concept in CG.

Keywords: construal, impersonal, personal, prototype, scope, setting

1. INTRODUCTION

One of the features of English grammar pertains to the existence of grammatical morphemes. On the types of sentences in which such morphemes appear, grammarians of English seem to agree. On the interpretation of such morphemes, however, they tend to differ. A telling example of a grammatical morpheme, which poses a problem to grammarians, is the

pronoun *it*, which is used to replace a noun or noun phrase which refers to things other than people in the discourse. The pronoun *it* occurs in a considerably broad range of constructions.

As illustrated below¹:

- 1) a. The pencil is blunt. *It* needs sharpening.
 b. The house is new. *It* has a swimming pool.
 c. The company is recent. *It* makes software.
 d. The dolphin is small. *It* is only 4 feet long.
 e. She needs love. Nobody provides it.
 f. Justice is important. One must support it.
 g. Famine is dangerous. It results in deaths.
 h. He tries to go into the film business. It is no easy matter.
- 2) a. It is Sunday.
 b. It is cold.
- 3) a. It is convenient to do banking by phone. To do banking by phone is convenient.
 b. I like it when everyone attends the party.

The constructions cited above highlight some of the different uses of the pronoun *it* in English. The constructions under (1) represent the use of *it* as a personal pronoun, where *it* is assigned the task of referring. *Reference* is a relationship between two linguistic elements, in which one refers to the other and so provides the information necessary to interpret it. The constructions under (1a-d) include examples of concrete entities. In (1a), *it* refers back to a lifeless object represented by *pencil*. In (1b), *it* refers back to a place represented by *house*. In (1c), *it* refers to an organisation represented by *company*. In (1d), *it* refers to an animal represented by *dolphin*. The constructions under (1e-h) include examples of abstract entities. In (1e), *it* refers back to an emotion represented by *love*. In (1f), *it* refers back to a concept represented by *justice*. In (1g), *it* refers back to a condition represented by *famine*. In (1h) *it* refers back to a situation represented by a clause.

The constructions under (2) and (3) represent the use of *it* as an impersonal pronoun, where *it* is assigned the task of non-referring². *Non-reference* is a relationship between two linguistic elements, in which one does not refer to the other but still provides the information necessary to interpret it. The constructions under (2) are simple in structure. In (2a), *it* embraces time represented by *Sunday*. In (2b), *it* embraces weather represented by *cold*. In this function, *it* is referred to, Quirk et al. (1985:348-9), as *dummy*, a grammatical unit which has no meaning, but completes a sentence to make it grammatical.

The constructions under (3) are complex in structure. In (3a), *it* anticipates the subject represented by *to do banking by phone*. In this function, *it* is referred to, Quirk et al. [1985:1391], as *anticipatory*, a grammatical unit which anticipates something

¹As is clear, the purpose of this paper is to account within the framework of CG for the occurrences of the pronoun *it* in various construction types in English. Because of that, I will not address the relationship between *it* and other English pronominal elements such as *this* or *that*. For such information, the reader is referred to Strauss [2002].

²The non-referring *it* has been variously called by grammarians: preparatory *it* [Jespersen, 1970], provisional *it* [Kruisinga, 1932], and introductory *it* [Hornby, 1975].

which appears later in the same sentence. The subject takes the form of a *to*-infinitive complement clause. The complement clause could also be an *-ing* gerund as in *It is pleasant watching a landscape*, or a *that*-clause as in *It is probable that she will make a full recovery*. In the present analysis, the focus will be restricted to infinitival complement clauses. In (3b), *it* anticipates the object represented by *when everybody attends the party*.

The constructions under (3) display alternation between two types of constructions. In (3a), the subject of the main clause is simply understood as indefinite or non-specified. This construction is referred to as *non-extraposed*, a construction in which the complement clause appears in the normal clause-initial position before the main predicate, which is the usual position for subjects in English. In (3b), the subject position of the main clause is occupied by the pronoun *it*. This construction is referred to as *extraposed*, a construction in which the complement clause appears in final position after the main predicate, and the subject position of the construction is filled by the pronoun *it*. *It* anticipates a *to*-infinitive complement clause represented by *to do banking by phone*.

A look at the various uses of *it* in the above constructions raises three questions. Concerning the constructions under (1-3), the question is: is *it* meaningful, and if yes what accounts for the variety of meanings which it exhibits? In terms of the cognitive approach adopted here, I will show that *it* is meaningful and its multiplicity is ascribed to the notion of *polysemy*, the fact that a lexical item has many but related senses. Concerning the constructions under (2), the question is: does *it* represent anything in such expressions?

In terms of the cognitive approach adopted here, I will show that *it* functions as a *setting*, the expanse within which an activity takes place.

Concerning the constructions under (3), the question is: does *it* contribute to the construction in which it occurs, and if yes what accounts for the difference between the alternative constructions? In terms of the cognitive approach adopted here, I will show that the employment of *it* is attributed to the notion of *scope*, the array of conceptual content which the speaker chooses to characterise an expression. The goal is to show how the cognitive analysis provides linguists with the necessary tools to convincingly investigate grammatical morphemes.

To tackle the issue of the pronoun *it*, I will organise the paper as follows. In section 2, I will probe the first question, namely the polysemous characterisation of *it*, which is couched within the notion of *prototype*. In section 3, I will investigate the second question, namely the status of the impersonal *it*. In 3.1, I will look at some previous analyses that have been made by scholars concerning the question.

Depending on their nature, I will group the analyses into two types: syntactic and semantic. In 3.2, I will posit the cognitive analysis of *it*, introducing the notion of *profile* and applying it to example constructions. In section 4, I will examine the third question, namely the contribution of *it* when it occurs in extraposed constructions. In 4.1, I will survey some of the previous analyses that have been made by scholars regarding the question.

Depending on their nature, I will group the analyses into three types: stylistic, syntactic and functional. In 4.2, I will posit the cognitive analysis, introducing the notion of *scope* and applying it to example constructions. Section 5, I will summarise the results of the analysis.

2. POLYSEMOUS *IT*

CG, as represented by Langacker [1987, 1991a], is a linguistic theory which views language as part and parcel of cognition, and regards grammar as being inherently meaningful. It focuses on language as a cognitive entity, and aims to describe those aspects of cognitive processing which underlie the linguistic system. Grammar is thus considered symbolic in nature; it reduces to the structuring of conceptual content. Unlike other models of grammar which assume that language is detached from the world of thought, CG maintains that human thought and language are not two separate modules but are intimately interrelated. CG considers the speaker's ability to conceptualise a situation in a variety of ways, and takes into consideration the role of human experience in providing the basic meanings coded in natural language. Linguistic meaning does not reside in conceptual content alone, for speakers are able to construe the same content in alternate ways, resulting in substantially different meanings coded in different linguistic structures.

In CG, a linguistic expression is a symbolic assembly. It has two poles: a semantic pole, its meaning, and a phonological pole, its form. The semantics associated with a symbolic expression is linked to a particular mental experience termed a concept, which derives in turn from a percept. The phonology associated with a symbolic expression is its perceptible form, which can be spoken or written. The use of a symbolic expression then involves mapping between its meaning and its form. All elements provided by language are ascribed semantic values, which motivate their grammatical behaviour. A lexical item or a grammatical marker is often polysemous, having multiple senses. These senses form a complex category, a network of interrelated senses by extending from a central sense, termed the *prototype*. From the central sense, all the other senses can somehow be derived. The central sense is usually the most frequent sense and the first sense learned in the process of language acquisition. The other different senses are linked to the central sense via semantic extensions.

In accordance with the *prototype* theory³, I argue that the pronoun *it* is a symbolic unit, being meaningful in all its uses. It forms a category of senses which are semantically motivated. That is, the meaning of *it* can be characterised by a complex network of senses, extending from a prototype. The senses in the network are related to one another in two ways: schematicity marked by solid arrows and extension marked by dashed arrows. A is schematic for B, while B is an elaboration of A. The senses vary greatly in their degree of salience. The criteria for distinguishing the different senses of *it* can, I argue, be established in the idealised model of *concreteness*. This model is scalar in dimension in that the entity described falls into two classes: concrete, referring to something viewed as a material entity, and abstract, referring to something viewed as a non-material entity. A speaker's knowledge of the pronoun *it* therefore embraces the entire network.

Prototypically, the pronoun *it* is assigned the status of reference. In this role, *it* means 'referring back to an entity which has previously been mentioned in the discourse'. An entity is something that exists as a material object in the real world or a non-material concept in the imagined world. In this use, *it* is parallel with other 3rd person pronouns. Relative to its nature, the entity is of the following types:

³For more discussions of the prototype theory, see Rosch [1978], Lakoff [1987] and Taylor [1989].

- a. In some cases, the entity is concrete. In *Have you seen my book? Yes, it is on the table*, *it* refers back to a lifeless object represented by *book*. This sense can be semantically extended to anaphoric senses for other kinds of antecedents. In *Have you been to London? Yes, it was very crowded*, *it* refers back to a place represented by *London*. In *Many people watch the BBC. It started broadcasting in 1937*, *it* refers to an organisation. In *The bear approached Patrick. It has thick fur*, *it* refers back to an animal, especially when its gender is not known. Some people use *it* to refer to babies in this way, as in *The mother feeds the baby. The father bathes it*⁴.
- b. In other cases the entity is abstract. In *Everyone is asking for love. Few seem able to provide it*, *it* refers back to an emotion. In *Truth is important. One must always speak it*, *it* refers back to a concept. In *Thousands live in poverty. We must combat it*, *it* refers back to a condition or state. In *I am trying to get a taxi. You won't find it easy*, *it* refers back to an entire situation, in which an event coded as a clause is reified as a kind of abstract thing.
- c. In rare cases, *it* is cataphoric. In this role, *it* means 'referring forward to an entity which comes later in the discourse'. This is a case of right-dislocation, moving an element to the end of a sentence. It is found mainly in spoken language. It is used to add clarification to a noun phrase. The entity could be concrete, as in *I liked it, the food*. It could be abstract, as in *I enjoyed it, dancing the tango*.

Peripherally, the pronoun *it* is assigned the status of non-reference. In this role, *it* means 'profiling a setting within which an activity is introduced'. A setting represents the region within which an event unfolds or a situation obtains. It is an expanse within which an activity is introduced or a context within which it emerges. Depending on the nature of the complement, the setting is of two types:

- a. In some instances, the setting is concrete. In *It is five o'clock* or *It is Tuesday*, *it* profiles a temporal setting, a location in time within which an action occurs. Recall that English allows sentences like *Monday witnessed a historic development*, in which *Monday* profiles a temporal setting within which the action of development is conceptualised to occur. Normally, one cannot conceptualise an event without connecting it with the time in which it occurs. In *It is freezing*, *it* profiles a spatial setting, a location in space represented by the environment, within which the action of freezing takes place. Recall that English allows sentences like *Chicago is freezing*. Naturally, one cannot conceptualise a meteorological event without connecting it with the environment causing it⁵.

⁴For a detailed treatment of English anaphora from a CG perspective, the reader is referred to van Hoek [1997].

⁵Some grammarians like Zandvoort [1962: 134], Visser [1963: 34], Onions [1932: 142] and Quirk et al [1985: 349] treat anticipatory *it* as a special kind of referential *it*, referring forward to the embedded clause. To defend the view that impersonal and extraposed *it* is non-referential, Jugnet et al [2006] provide two arguments. The first argument is based on a property of without adjuncts. In impersonal constructions, the presence of *it* in a subject position following *without* is optional, as in *It never thunders here without Ø/it raining for days afterwards*. There is no clear difference between the two variants, so it is hard to see if *it* contributes a referential meaning. This is unlike a normal sentence where the subject position should be empty due to coreferentiality with the main clause subject, as in *He never laughs without *him crying right afterwards*. Likewise, *it* cannot alternate with a phrase having a similar reference, as in **In Paris is raining*. The same argument applies to *it* in extraposed constructions, as in *If you are in fact forcing the issue, it is very difficult*.

- b. In further instances, the setting is abstract. In *It is tragic to hear the news of a plane crash*, it is used as an anticipatory subject, and so the construction is referred to as a *setting-subject construction*. It profiles an abstract setting within which a situation represented by a complement clause takes place. Moreover, it codes the general circumstances that surround the occurrence of the complement clause. In *I would hate it if they said so*, it is used as an anticipatory object, and so the construction is referred to as a *setting-object construction*. It profiles an abstract setting within which a situation represented by a complement clause takes place. Moreover, the presence of *it* serves to iconically distance the content of the complement clause from the main clause subject⁶.

For convenience, I will summarise in Figure 1 below the semantic structure of the impersonal pronoun *it*. Let us summarise the main thrust of the argument. Prototypically, *it* is assigned the status of referring. *It* refers back to a concrete entity. Peripherally, *it* is assigned the status of non-referring. *It* serves as setting hosting an occurrence. The source of the non-referring *it* is, I argue, from its use as a referring pronoun, which represents a natural extension.

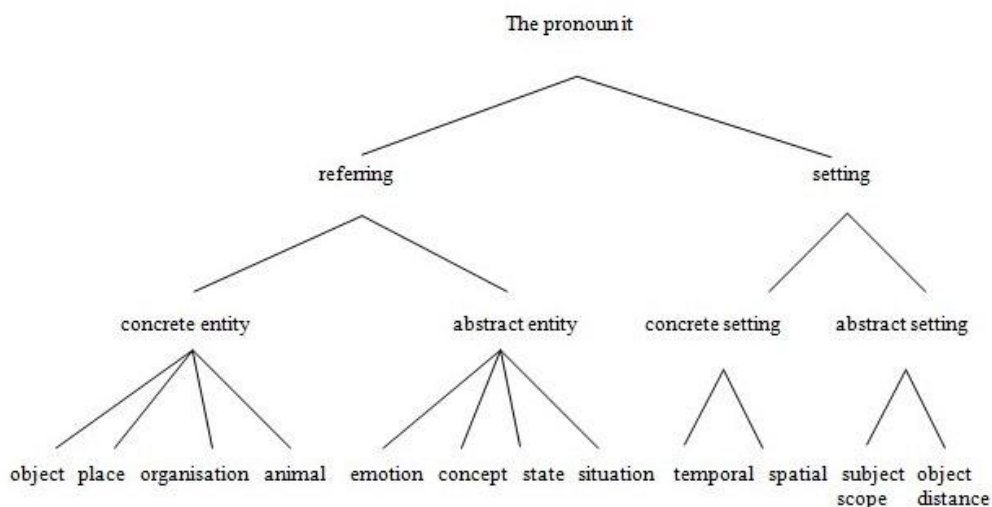


Figure 1. The semantic network of the impersonal pronoun *it*.

to do so without it seeming that you are doing so. The second argument is on coordination. In extraposing a coordination of clauses which trigger plural agreement if they are in subject position, it is impossible to have both in subject position in place of it, as in *It was*/**Both* were surprising to me that she suggested buying steak and that he agreed.

⁶ In this use, the presence of the pronoun *it* is explained by the principle of conceptual distance. As Haiman [1983:782] explains, “The linguistic distance between expressions corresponds to the conceptual distance between them”. On the basis of this, it is used to iconically distance the content of the complement clause from the main clause subject or from the attitude expressed by the main clause verb. As noticed by Smith [2002: 97-8], the conceptual distancing can be motivated for a variety of reasons. Most often, it occurs when the complement clause follows negative-implying verbs as in the example given above. However, it can also occur if the complement clause follows positive verbs, as in *I like it when they win*. In such cases, it helps the speaker to view the desirable complement content from a distance so that its entire import can be properly appreciated.

It is caused by a metonymic operation by which *it* ceases to refer back to an entity and instead comes to profile a setting of some sort within which an occurrence is construed to happen. The use of the non-referring *it* represents then an instance of setting-subject constructions. Consequently, such constructions are classified as setting-subject constructions, and an important part of their analysis thus consists in defining the specific nature of the setting *it* profiles. Such constructions in which the focal status is conferred on the setting are referred to as *setting-subject constructions*. Overall, the pronoun *it* represents an important test case for the claim that grammar comprises only meaningful elements.

3. IMPERSONAL *IT*

In the semantic network of the pronoun *it*, one important example that has been demonstrated pertained to its occurrence in impersonal constructions. In describing a situation, the speaker has, relative to the demands of discourse, the ability to single out different participants for focus. The question posed then is: what does *it* exactly represent in such constructions? In this regard, the status of impersonal *it* has been repeatedly addressed in the literature. Different views have been expressed. Due to the absence of agreement, I feel that a fresh look at the problem under investigation from a cognitive perspective is necessary. The aim is to see if a cognitive discussion of the problem has the potential of shedding more light on the question. To answer the question, I will pursue two steps. First, I will survey the previous analyses and see how they treat *it*. Second, I will identify the type of construal, posited by the present analysis, which *it* represents.

3.1. Previous Analyses

Previous analyses of the impersonal *it* proceed in two different trends. The first is syntactic and represents Traditional Grammar and Transformational Grammar. The second is semantic and represents Functional Grammar. Each analysis is a reflection of the underlying assumptions of the theory it adopts. In 3.1.1, I will provide a brief overview of the syntactic analyses. In 3.1.2, I will present a brief overview of the semantic analyses. At the end, I will point out the difficulties of each analysis. The purpose behind discussing previous analyses is not to criticise them but to find out if they are relevant to the present analysis or to see if the present analysis can build on any of their assumptions.

3.1.1. Syntactic Analyses

Under traditional analysis, Jespersen [1970:144] describes the anticipatory *it* as meaningless, where *it* occupies subject position and anticipates the subject. He writes: “*It* stands as a preliminary representative of a longish group of words which follows later because its placement here would make the sentence-structure cumbersome or top-heavy”. In this function, *it* serves to herald a deferred subject, hence it is often referred to as a *dummy* subject, as in *It is lovely to walk/walking along the beach*. The insertion of *it* in the vacant place of a postponed clause is the result of a grammatical device to make the sentence conform to the norm, i.e., the structural need for a surface subject. According to Jespersen, as

quoted by Morgan [1968:86], it is a condition of well-formedness for declarative sentences in English that they have an overt subject in the normal position, and that where this condition is not met, for whatever reason, an *it* is inserted. Sentences with anticipatory *it* must be distinguished from sentences where *it* is a pronoun and acts as a replacement for an inanimate object, as in *I don't like the look of this car, but I will buy it*.

Under transformational analysis, Rosenbaum [1967] considers anticipatory *it* the head noun in the deep structure, which gets deleted when the phrase of which it is the head is not extraposed to the end of the sentence. *It* is the head noun of the noun phrase containing the extraposed construction. According to Morgan [1968:84], this is unjustifiable, since head nouns, like pronouns, must have index of intended referent. So, he changes Rosenbaum's proposal and says that *it* is only an empty morpheme, with no index for referent, which is merely left as a marker when extraposition occurs. In Relational Grammar, Perlmutter [1983:160-2] accounts for the presence of *it* in the following way: when no other nominal is the final subject of a clause, a dummy element must be inserted into the clause as a final subject. The reason is to keep the finite verb from appearing in initial position. When the subject slot in an impersonal structure is vacant, the dummy appears to fill it. Consequently, the dummy determines surface agreement.

Haegeman [1991:53-5] and Haegeman and Guéron [1999:42] refer to *it* as an *expletive* pronoun, which is required to fill a gap following the application of the meaning-preserving transformation of extraposition. *It* turns up in the subject position of a sentence, i.e., the noun phrase position for which the verb does not subcategorise, and to which the verb does not assign a thematic role. In the semantically equivalent pair of sentences *To see him around surprises me* and *It surprises me to see him around*, *it* plays no role in the semantic make-up of the extraposed one; its presence being required for structural reasons only. *It* is considered a non-referential element because it does not refer to an entity, a person or an object. Unlike a noun phrase subject which receives a thematic role, *it* cannot be questioned, as in **What surprises me to see him around? It* has neither a thematic role nor a semantic content; therefore it cannot be questioned or otherwise replaced. *It* functions as a grammatical subject of a sentence whose real subject is a deferred noun phrase.

Seppänen et al. [1990: 756-7] and Seppänen [2002] attach to anticipatory *it* the function of a meaningless dummy subject. To back up *it*'s meaningless status, they provide two pieces of evidence. First, impersonal *it* and anticipatory *it* have no equivalent in other languages at all. Second, in coordinated structures the second *it* can be reduced, as in *It is snowing, and (it is) rather difficult to go on driving*. Likewise, Seppänen et al. [1990: 753-4] identify anticipatory *it* with non-referring *it*. The only difference is that anticipatory *it* is used with a notional subject. To reveal *it*'s lack of referential force, they propose two pieces of evidence. First, if *it* were referential it should alternate with the stressed pronoun that as in *It/*That won't be easy to get taxi to the station*. Second, *it* cannot replace plural *they* when the latter refers to a sentential antecedent, as in *To speak French and to understand mathematics are both important, but they/*it are not the most important things in the world*. These views can easily be dismissed as the evidence presented does not seem conclusive. For detailed counter-evidence against them, see Kaltenböck [2003: 235-55]⁷.

⁷ Some grammarians like Kruisinga [1932:715], Visser [1963: 36], Biber et al [1999: 332] also consider the impersonal *it* meaningless.

For syntactic analyses it seems that the answer to the question concerning the meaningfulness of *it* is clearly *No*. Syntactic analyses consider *it* a meaningless element inserted obligatorily in certain positions in certain structures to fill a place that would otherwise be unfilled. Traditionalists view *it* as a mere syntactic place holder whose only function is to satisfy the structural need for a surface subject in English. Transformationalists view *it* as a mere slot-filler of the otherwise unfilled subject position and as a pronoun without any semantic contribution to the construction. In the literature, *it*'s presumed lack of meaning explains the label of *dummy* or *pleonastic* given to the pronoun. Sometimes, *it* is referred to as the anticipatory subject or the grammatical subject. The clause which is related to *it* is sometimes referred to as the logical subject or the real subject.

3.1.2. Semantic Analyses

Under semantic analysis, the fact that impersonal *it* cannot be substituted does not necessarily indicate that it is meaningless. Semantic investigations of impersonal constructions have attempted to show that *it* is a real subject, and provides a semantic import to the construction in which it occurs. In disagreement with those treatments which deny any value to *it*, Bolinger, in a pioneering work on *it* (1977a, 1977b), contends that there is more to the meaning of *it* than a mere non-referring function. Bolinger shows that in certain cases, the non-extraposed equivalent of the impersonal construction is ungrammatical; therefore, *it* must have some semantic import beyond its cataphoric value. As evidence, he presents an example like *It's pleasant in California* vs. **In California is pleasant*. If the semantic function of *it* were merely to cataphorically refer to the location *in California*, one would expect that location to be able to occur as subject in the non-extraposed equivalent. The example cited above shows that it is not the case, and that *it* must be adding its own semantic import.

Bolinger (1977a:84) considers *it* a morpheme with its own lexical content. He analyses *it* as "a nominal with the greatest possible generality of meaning". He attaches to *it* the property of ambience, which means that "*it* has as its referent precisely the 'environment' that is central to the whole idea". Bolinger (1977a:77) calls *it* "ambient". The real importance of *it* is the coding of some kind of general circumstances surrounding the event presented in the expression. Bolinger argues that all the uses of *it* stem from this common semantic base. As evidence, a sentence containing *it* can be specified by the addition of a redundant adverbial, as in *It is cold outside*. Likewise, a sentence containing *it*, (ibid: 80), cannot be questioned by interrogative pronouns as in **what is cold*.

In Chafe's [1970:101-2] treatment, *it* is commonly viewed as serving the function of pointing forward to an extraposed clause. In this way, *it* is thus considered not to be completely devoid of meaning. The most obvious characteristic of the impersonal pronoun *it* is its close relationship with the clause content. Chafe focuses on that relationship and argues that the overall import of *it* is cataphoric. *It*'s importance pertains primarily to the speaker's sense of how important the referent is going to be in the upcoming discourse. In this sense, *it* cataphorically announces the content expressed in the complement clause in spite of the fact that *it* does not have any normal meaning. For example, in a sentence such as *It is useless to talk to him*, the impersonal *it* cataphorically serves to announce the complement content *to talk to him*. In essence, *it* is deemed a herald that something important is soon going to happen.

In Deane's [1992:158-9] view, *it* is used to refer back to a previous clause, as in *Did John come? I don't believe it*. On the basis of this anaphoric use, Deane analyses the expletive *it* of

extraposition as a pronoun whose antecedent is the extraposed clause. Consequently, *it* is a genuine subject and provides an argument for the clause to be predicated of. If we exclude the extraposed clause, a sentence containing expletive *it* has exactly the same basic structure as a sentence with a clausal subject. The extraposed clause is the only unusual aspect. It appears to be loosely adjoined to the rest of the construction even though it bears a special relationship with the expletive pronoun. The relationship between the pronoun and the extraposed clause can be described in terms of mutual linkage. The expletive pronoun is linked to the extraposed clause through reference. The linkage between them is caused by the fact that they cannot occur on their own.

Following Bolinger [1977a], Kaltenböck [2003:235-255] considers the anticipatory *it* a definite nominal which retains some of the referential force of the referring *it*. In this way, it allows *it* to establish a referential link with a clausal constituent in the immediate context. As such, anticipatory *it* takes an intermediate position between non-referring and referring *it*. *It* is related to the other types of *it* by a scale of gradience which specifies its scope of reference. Kaltenböck's view differs sharply from a formalist approach which describes *it* as meaningless. Unlike the formalist practice of verifying hypotheses about the classification of linguistic items by means of grammaticality judgements of isolated sentences, Kaltenböck's approach takes into account corpus data of actually occurring instances of anticipatory *it*. This is so because in the formalist approach the meaning of a particular form resides in the speaker's competence, whereas in Kaltenböck's functionalist approach it is also the result of interaction with contextual factors.

For semantic analyses, *it* has meaning of its own, and thereby provides a semantic contribution to the construction in which it occurs. Bolinger argues that *it* is meaningful, with the whole ambience of the situation as its referent. For the purposes of the present study, Bolinger's analysis of *it* is quite relevant as it attaches a specific meaning to it. The uses of *it*, however, have been limited to simple constructions, e.g., weather. On this basis, the meaning *it* has cannot be generalised unless it is applied to complex constructions containing complement clauses, which the present study attempts to explore. By contrast, Chafe and Deane argue that *it* is a syntactic entity when it points to a clause and a semantic entity when it points to a proposition. As is clear, such treatments of *it* can be considered half-way between syntactic and semantic analyses. For the purposes of the present study, such analyses are not quite relevant as they do not give *it* any explicit or precise meaning.

3.2. Cognitive Analysis

Under the cognitive analysis, the syntactic hypothesis that the expletive *it* is motivated to fill in a subject position is just the structural part of the story. This is so because English generally requires overt subjects. The hypothesis that the *it*-construction is the result of movement is questionable. There is no evidence from history showing that the *it*-construction had at an earlier stage a non-extraposed counterpart. In tracing the history of the 'quasi-impersonal subject' *it*, Kim [1999:338] found that a *that*-clause was always post-verbal. Thus, it cannot be claimed that any movement of a *that*-clause has occurred over time. The diachronically constant post-verbal position of the *that*-clause discourages one from assuming an extraposition transformation synchronically. Rather, the expletive *it* began to be used only to fill in the subject position as the language turned from a status which does not require a

prototypical subject to that which requires *it*. However, the semantic hypothesis that *it* is not truly devoid of meaning and that *it* adds a semantic substance to the construction in which it occurs is accepted in the present analysis.

The present analysis embraces Bolinger's thesis, but goes a step further and provides an analysis of *it* couched within the theory of CG. In terms of CG, *it* has a semantic import. *It* encodes distinct uses, which are a response to the communicative needs of the discourse. The cognitive approach adopted here is in conflict with the other ones for some good reasons. The traditional analysis considers *it* as meaningless; *it* anticipates the real subject which comes later in the discourse. The transformational analysis contends that *it* is incapable of encoding any meaning; *it* is merely the product of transformation. Even though *it* is considered meaningless, some transformationalists, notably Radford [2004:230], recognise that it must be marked for person and number, so it is not entirely a cipher. The functional analysis attaches only one single meaning, that of ambience, to the morpheme. In what follows, I will introduce the notion posited by CG, and demonstrate how it can be fruitfully applied to tackle the issue of the impersonal *it*.

3.2.1. Profile

In CG, a crucial aspect of meaning is the speaker's ability to construe a situation in more than one way. The speaker's attitude in shaping his or her utterances is incorporated in the notion of *construal*. Langacker [1987:487-8] defines *it* as "the relationship between a speaker (or hearer) and a situation that he conceptualises and portrays". Construal is a mental operation that helps the speaker select the appropriate structural possibility among various alternatives to match with his/her conceptualisation. The ability of the speaker to make alternative conceptual choices results in different morphosyntactic manifestations. As Langacker [1991b:ix] points out: "There are many different ways to construe a given body of content, and each construal represents a distinct meaning; this is my intent in saying that an expression imposes a particular image on the content it evokes". Grammar provides the speaker with conventional structures to draw on in mapping his conceptualisations onto language. These grammatical structures, as Langacker [1987:98] stresses, are the syntactic realisations of the speaker's conceptualisation.

One relevant dimension of construal is the conceptualiser's ability to impose a profile on a base, which directs the semantic value of a linguistic expression. This is referred to as *profiling* by Langacker [1988:68-9]. In his model of grammar, the semantic pole of an expression always has a certain *base*, defined as the array of conceptual content it evokes and draws upon as the basis for its meaning. Within the base, a particular entity is selected for designation. This designatum is referred to as *profile*, defined as the substructure within the base of an expression which functions as a focal point and receives the highest degree of prominence. Linguistically, such a profiled substructure is most likely placed in an important position, which is subject position. Semantically, the profiled substructure is held responsible for triggering an action, making an assessment or inducing an experience expressed by the expression.

Another relevant dimension of construal is the conceptualiser's ability to confer subject or object status on a substructure within a base. This is referred to as *participant choice* by Langacker [1991a:330-5]. The one that stands out as the primary figure within the expression is referred to as the *trajector*, which is often associated with the function subject. The other that acts as the secondary figure is called the *landmark*, which is often associated with the

function object. The notions of trajector and landmark are very close to Talmy's notions of *figure* and *ground*. Langacker [1987:120] writes: "the figure within a scene is a substructure perceived as 'standing out' from the remainder (the ground) and accorded special prominence as the pivotal entity around which the scene is organised and for which it provides a setting. Figure/ground organisation is not in general automatically determined for a given scene; it is normally possible to structure the same scene with alternate choices of figure".

To make all this clear, let us consider Langacker's [1991a:295-7] examples, where the action chain is realised linguistically differently, and where the speaker chooses to profile different segments of it. In a three-element action chain like *Floyd broke the glass with a hammer*, the entirety of the action chain is in profile; the agent *Floyd* is coded as subject, the patient *the glass* as object, and *a hammer* as instrument. In a two-element action chain like *The hammer broke the glass*, the agent is left unprofiled, while the rest of the chain is in profile; the instrument is coded as subject and the patient as object. In a single-element action chain like *The glass broke*, the agent and the instrument are left unprofiled, while the patient alone is in profile, and hence coded as subject. Profiling can, however, fall on other aspects of an expression. [Langacker:in press] In *Florida experiences a lot of hurricanes*, the spatial setting designated by *Florida* is in profile and hence coded as subject. In *The last few decades have witnessed amazing scientific progress*, the temporal setting designated by *decades* is in profile and hence coded as subject.

The consideration of these examples reveals some important cognitive principles. First, profiling is not an either/or matter. The particular profile imposed on a base is a consequence of the way the conceptualiser construes the scene, and not an inherent property of that scene. Different linguistic expressions can have the same base, and only be different due to the nature of their profile. Second, the recognition of an entity as subject or object is independent of its thematic role. Structural assignment is treated as a matter of clausal prominence, irrespective of any thematic role. The particular realisation of a linguistic expression then represents the conceptualiser's choice to express what is most important depending on its communicative needs. This is done through the process of assigning prominence to certain elements within the expression. Third, in describing a situation the speaker can resort to a non-delimited range of considerations. In what follows, I apply these notions to the description of the impersonal *it*.

3.2.2. Application

To see how this works, let us analyse some examples. In the construction *It is five o'clock*, *It is freezing*, or *It is getting rather late*, *it* profiles a concrete setting within which an activity takes place. *It* profiles what Langacker [1999:357-60] calls a *presentational frame*, in which a situation of some sort is introduced. *It* pertains to the presentation of the situation rather than being part of it, and shows how important the situation introduced in the upcoming discourse is going to be. In fact, there is a kind of container-content relationship between *it* and the situation, as Smith [2002:77] also found in the case of German *es*. In such a relationship, *it* serves as a container, and the temporal or spatial event as its content. In the examples cited so far, *it* is assigned a non-participant status in the profiled event, being nothing more than a frame with a presentational function. In such examples, the frame that *it* designates is selected for primary focal prominence because *it* serves to introduce the event and because the construction lacks a suitable participant to put in focus.

In the construction *It is tragic to hear the news of a plane crash*, *it* profiles an abstract setting within which a situation represented by a complement clause takes place. *It* profiles a setting or a host, in which an event is construed to happen. *It* serves as a setting-subject marker, identifiable as the immediate scope of the expression. The immediate scope is the general locus of viewing attention with respect to which a situation is interpreted. The immediate scope represents the general focus of attention and contains the event that is in profile. In this use, the pronoun *it* profiles what Langacker (in press) calls a *field* or *scope of awareness*, everything evoked in assessing an issue at hand. *It* represents a case of non-delimitation or vagueness in its reference. In this use, *its* crucial import is to code some kind of general circumstances surrounding the event presented in the complement clause. In the example cited above, *it* profiles a setting within which the event of a plane crash takes place, and draws attention to the general circumstances surrounding it. In this example, the speaker's emotion is inspired mainly by the crash of the plane, and might include other circumstances surrounding it, e.g., loss of life, shock that strikes the families, shake of confidence in travelling by air, harm inflicted on the reputation of the airlines, etc.

4. EXTRAPOSITION *IT*

In the semantic network of the pronoun *it*, one important example that has been demonstrated pertained to its occurrence in clausal complementation. In response to the needs of communication, the speaker can describe a situation in different conceptual ways and, making use of the linguistic resources, map them onto different syntactic forms. In impersonal constructions containing complement clauses, the speaker's conceptualisations take two forms: non-extraposed and extraposed constructions. In the former, the complement clause appears in initial position before the main predicate. In the latter, the complement clause appears in final position after the main predicate, and the subject position is filled by the pronoun *it*. The question posed then is: what is the difference between the two constructions? To answer the question, I will set two tasks to achieve. First, I will pinpoint the factors, suggested by the previous accounts, which affect the use of either construction. Second, I will specify the type of construal, suggested by the present account, which is imposed on the scene of either construction and triggers its syntactic form⁸.

4.1. Previous Accounts

Previous accounts suggest three types of distinction between non-extraposed and extraposed constructions. One type of distinction relates to style. In 4.1.1, I will devote the discussion to stylistic distinction. Another relates to syntax. In 4.1.2, I will dedicate the discussion to syntactic distinction. A further one relates to function. In 4.1.3, I will present the functional distinction. At the end, I will point out the difficulties of each analysis. Due to the disagreement among grammarians concerning the distinction between the two types of construction, a new cognitive analysis seems essential. The new analysis will take into

⁸ Some grammarians like Jespersen [1970], Biber et al [1999: 660] and Huddleston and Pullum [2002: 1481-2] consider the use of anticipatory *it* in extraposed constructions meaningless.

consideration the use of the constructions in context. The aim is to show that *it* is not randomly chosen from the lexicon, but rather employed relative to the way the speaker construes a situation.

4.1.1. Stylistic Distinction

With respect to style, two factors affect the structural alternation. One factor is informal style, which is suitable for ordinary situations. For extraposed complement constructions, the disparity, according to Mair [1990:40], is slightly in favour of this style, as in *It is advisable to disconnect the computer before you open it*. The other is formal style, which is suitable for official situations. For non-extraposed complement constructions, the disparity is highly in favour of this style, as in *To disconnect the computer before you open it is advisable*. From this, it follows that a non-extraposed complement construction has a formal flavour.

In the spirit of the times, Langacker [1974:653] claimed that extraposition is stylistic in character. It facilitates the production and comprehension of sentences by allowing the displacement of heavy constituents to final position, where they can be handled without disrupting the processing of the remainder of the sentence. In brief, in the absence of considerations mentioned in the following sections, extraposed complement constructions are clearly the more common and the more natural, whereas non-extraposed complement constructions are rather formal and often awkward. Although the extraposed construction is much more frequent, Huddleston [1988:451] describes the extraposed construction as being derived transformationally from the non-extraposed one⁹.

4.1.2. Syntactic Distinction

With reference to syntax, two factors govern the structural alternation. One factor is syntactic complexity, as mentioned by Wasow and Arnold [2003:119]. According to this factor, the employment of extraposition moves longer clauses to the end of a sentence to facilitate production. In *To learn that his new home is furnished is a relief*, the subject of the sentence is the clause *to learn that his new home is furnished*. To avoid this complexity, the clause is extraposed and is replaced by *it*, as in *It is a relief to learn that his new home is furnished*. The other factor is referential disambiguity, as reported by Mair [1990:33-40]. According to this factor, the avoidance of extraposition disambiguates a *for/to*-infinitive construction. In a sentence like *It is wicked for him to do so* there is hesitancy between interpreting *for him* as part of the main clause or part of the complement clause. To avoid this disambiguity, a non-extraposed variant with *for him* in clause initial position is used, as in *For him to do so is wicked*.

In Huddleston's [1988:452-3] viewpoint, the structural alternation is subject to some conditions. Extraposition is obligatory in two cases. The first case is with finite and *to*-infinitival complement constructions when the main clause has the operator (auxiliary)+subject order. This is instanced in *Is it necessary to tell her?* vs. **Is to tell her necessary?* Notice that *-ing* gerundial complement clauses can follow the operator, as in *Would recalling Smith serve any real purpose?* The construction may sound somewhat clumsy, but it is not ungrammatical. The second case is with verbs such as *appear*, *seem*, *chance*, *happen*, *remain*, and the passive of *hope*, *intend*, etc. This is instanced in *It appears*

⁹ In the transformational accounts of Rosenbaum [1967] and Edmonds [1976], the extraposed version is similarly assumed to be derived from the non-extraposed version.

that he left vs. **That he left appears*, and *It is hoped to follow this up in a later paper* vs. **To follow this up in a later paper is hoped*. Extraposition is rendered more difficult when the predicate is verbal. However, the present analysis sees nothing at all awkward about expressions such as *To teach young children requires great patience and vast experience* versus *It requires great patience and vast experience to teach young children*. As Kaltenböck [2004b] reports, verbal predicates are well attested with extraposed infinitives¹⁰.

4.1.3. Functional Distinction

As regards function, two factors determine the structural alternation. Non-extraposition is determined by a *given-before-new* factor, as suggested by Wasow and Arnold [2003:147]. According to this factor, the use of non-extraposition serves to link a subject clause which contains given information and has a strong anaphoric reference to the preceding context. Old information is more accessible at a number of levels, easier to produce early in the utterance, and needed to introduce the new information. In the light of this factor, the ordering *given-before-new* is posited as the neutral order of information in the clause and is meant to achieve coherence and facilitate comprehension. A sentence illustrating this pattern is *To win the cabinet's approval to his economic strategy is pivotal*. In this example, the speaker echoes what has been contextually debated, i.e., the topic of economic strategy.

By contrast, extraposition is determined by an *end-weight* factor, as proposed by Quirk et al. [1985:1355-1377]. According to this factor, the use of extraposition serves to place long and heavy constituents in the final position of a sentence so as to facilitate production. A concomitant factor is the *end-focus*, which places new information at the end of a sentence in order to give it prominence. An illustration of this pattern is *It is valuable to learn that brinkmanship reduces feelings of stress under pressure*. By using this pattern, the speaker achieves two purposes. First, s/he places the long and the complex constituent at the end. Second, s/he focuses on the new information concerning the reduction of stress. In doing so, the speaker is intent on facilitating the processes of utterance planning and production. The factors of short-old and long-new structures seem, as Arnold et al. [2000] write, to correlate. Short phrases with given referents tend to be easier to produce than longer phrases with new referents.

Let us summarise what has been said so far. When the information is given, it is more likely to be placed initially in the clause. Conversely, when the information is new, the more likely it is to be placed finally in the clause. Non-extraposition is used to achieve two purposes. First, it is used to achieve a balanced distribution of information within the construction. This happens when the complement clause is short and given in information, whereas the main clause is usually long and new in information, as in *To do nothing would lead either to getting the sack or to having a guilty conscience*. Second, it is used to create smooth transitions between constructions. This happens when a complement clause as in *To take his advice to heart is useful* refers anaphorically to a previous sentence like *He advises you to see a lawyer*. For more on constituent ordering in other areas of grammar, see Arnold et al. (2000) and the references cited therein¹¹.

¹⁰ For a detailed coverage of linear ordering in other areas of grammar, see Hawkins [1994].

¹¹ For more on the topic of extraposition from other perspectives, see Erdmann [1990], Collins [1994], Herriman [2000a/b], Kaltenböck [2004a/b, 2005], Miller [2001], Gómez-González [1997, 2001], among others.

4.2. Cognitive Account

The preceding discussions have furnished the factors affecting the use of either construction. According to the stylistic factor, non-extraposition is considered formal, whereas extraposition informal. In the light of the syntactic factor, extraposition should be used to avoid a heavy subject by moving it to the end of a sentence in accordance with the end-weight principle. In view of the functional factor, new information should be placed at the end of the sentence to receive focus. These factors seem to work for some cases in an account describing the problem under investigation. However, for an account to be comprehensive and adequate, these factors require the addition of the semantic factor. In CG, the syntactic structure of an expression directly reflects its semantic structure; thus they are indissociable. On this basis, the non-extraposed and extraposed instances are treated as distinct although they have the same conceptual content and their conceptualiser is generalised, defocused and implicit. Structural variants have different meanings resulting from different construals. In what follows, I will first introduce the basic notion offered by CG, and second show how the notion applies to the description of the pronoun *it*.

4.2.1. Scope

CG assumes a subjectivist account of linguistic semantics, which stipulates that the meaning of a linguistic expression includes both the knowledge system it evokes when the expression is activated as well as the particular construal the speaker imposes on its conceptual content. [Langacker 1997:4-5] *Construal* refers to the cognitive ability of the speaker to conceive a situation in alternate ways and to choose the appropriate structures in language to express them. Two expressions can have the same conceptual content, and only be different semantically by virtue of their choice of construal. Alternative expressions then represent different construals imposed on a conceptual content. The construals employed to structure situations amount to different mental experiences. Linguistically, these construals are mapped onto different linguistic realisations. Each linguistic realisation describes the same conceptual content, but does so in its own way. Therefore, the construal embodied by a linguistic expression constitutes a crucial facet of its meaning.

One relevant dimension of construal is *scope*. According to Langacker [1987:118-120], scope is the array of conceptual content that an expression evokes and relies upon for its characterisation. Scope contains the profile and represents the general focus of attention. It is vague and non-delimited in reference in that it comprises everything a conceptualiser is aware of at a given moment to assess the meaning of an expression. The conceptualiser's scope of awareness is what Langacker (to appear) refers to as *field*, i.e., everything evoked in describing a situation. An expressions's maximal scope is organised hierarchically with respect to prominence and relevance. The one with the highest degree of prominence and relevance is identified as *the immediate scope*, the general locus of viewing attention with respect to which an expression is interpreted. Considering Langacker's examples, the term *knuckle* evokes as its immediate scope the conception of *finger* for its characterisation. It is specifically the *finger* which is prominent and immediately relevant to the concept *knuckle*. The immediate scope is therefore describable as the context necessary for the characterisation of the profile.

The semantic distinction between extraposed and non-extraposed constructions is quite subtle but significant. The distinction is not based on the operation of generative rules; it is

exclusively a property of construal which gives the speaker the flexibility to construe his or her conceptualisation in alternate ways. Under this view, I argue that the choice as to which construction to use is motivated by the construal of *scope*, which is the array of conceptual content that an expression evokes and relies upon for its characterisation. One way in which the speaker exercises choice in construing a situation is by taking either a narrow or a *broad* view of it, which can change relative to the change of the aim he or she has in mind. In the narrow view, the speaker considers a minimal range of content in describing the situation. In the *broad* view, he considers a maximal range of content in describing the situation. The type of scope chosen is then deemed crucial for the characterisation of a given situation.

A non-extraposed complement construction takes a narrow view of a situation. The reason, I argue, is ascribed to the absence of a *field* represented by *it*. In this type of construal, the complement clause is considered the sole factor in inducing the experience in the speaker. That is, the reason for the experience expressed by the main predicate is unilateral, which is attributed solely to the complement content and does not involve anything else. By contrast, an extraposed complement construction takes a *broad* view of the situation. In this type of construal, the speaker considers all parts of a situation together in contributing to his or her experience, in which the complement content is the most important. It is the locus of factors inducing the experience in the speaker, and so the reason for the experience expressed by the main predicate is multilateral. The source of the speaker's experience in the extraposed construction is therefore somewhat larger in scope than in the non-extraposed one.

4.2.2. Application

To see the contrast, I will examine a range of constructions which are diverse enough to support the argument. In what follows, the constructions defocus the conceptualiser, and so tend to be construed in a generalised fashion. Given that the conceptualiser is implicit, and that English requires an overt subject, the constructions place other participants in such positions. In this respect, the language makes available two different construction types, each differing with respect to selection of grammatical subject. The predicates in the constructions can take as their subject either a complement clause or impersonal *it*. The contrast between the constructions is a matter of whether the trajector is identified as the complement clause or the experiential field represented by *it*. The constructions involve the same elements and describe the same situation; nevertheless they differ primarily in terms of which facets of the situation they highlight through the mental operation of *scope*. When the complement clause content is in focus, a non-extraposed construction is used. When the general circumstances are in focus, an extraposed construction is used¹².

Let us first consider the domain of evaluation, which I will exemplify by means of adjectival predicates expressing intellectuality, as seen in (4):

- (4) a. To argue about a trivial issue is unwise.
 b. It is unwise to argue about a trivial issue.

In the non-extraposed version in (4a), the complement clause is in profile and hence chosen as subject. The complement clause serves as the trajector of the adjective, and so is coded as subject. In this type of construction, the speaker takes a *narrow* view of the

¹² For a detailed discussion of the different domains evoked by the main complement-taking predicates used in *it*-construction, see Hamawand [2002].

complement event. Semantically, the content of the complement clause is considered the only stimulus that induces the evaluation. So, the reason for the evaluation is deemed unilateral, in the sense that the complement content is held solely responsible for the evaluation made by the speaker. The act of arguing about a trivial issue functions as a sole stimulus, and consequently induces a certain judgement by the speaker. A construction of this type simply highlights the role of the situation as target of evaluation. The reason is that in this type of construction the speaker's scope of awareness is limited.

In the extraposed version in (4b), the pronoun *it* is in profile and hence chosen as subject. The speaker's scope of awareness, i.e., *field*, profiled by *it* serves as trajector, and so is coded as subject. In this type of construction, the speaker takes a *broad* view of the complement event. Semantically, *it* represents a global stimulus subsuming the general circumstances which are responsible for the inducement of the evaluation.

The global stimulus embraces two components: the complement content which is central and the general circumstances surrounding its occurrence, including its consequences such as severing ties with people or distorting one's image in the eyes of people. So, the reason for the evaluation is deemed multilateral.

A construction of this type, which is introduced by *it*, subsumes the range of considerations that can be brought to bear for the evaluation. The reason is that in this type of construction the speaker's scope of awareness is non-delimited.

Adjectival predicates expressing intellectuality include *good/bad*, *(in)convenient*, *(un)fair*, *(il)legal*, *(il)legitimate*, *(il)logical*, *(in)sensible*, *(un)natural*, *(un)reasonable*, *(un)wise*, etc. This is shown in examples such as *To get more money for less work is unfair* vs. *It is unfair to get more money for less work* vs. *More money for less work is unfair (to get)*. The domain of evaluation involves other predicates expressing other meanings. Adjectival predicates expressing morality include *(in)appropriate*, *(in)correct*, *(in)decent*, *(un)ethical*, *(im)polite*, *(im)proper*, *(im)prudent*, *right*, *wrong*, etc. This is shown in *To wear a tie is appropriate* vs. *It is appropriate to wear a tie*.

Let us second consider the domain of modality, which I will exemplify by means of adjectival predicates expressing ease or difficulty, as seen in (5):

- (5) a. To make a momentous decision is tough.
- b. It is tough to make a momentous decision.

The difference in meaning between (5a) and (5b) rests on scope. In the non-extraposed option in (5a), the complement clause is chosen as subject. It represents a narrow view of the conceptualiser and functions as the sole stimulus in provoking the description. In the extraposed option in (5b), the global field or the immediate scope represented by *it* is chosen as subject. It represents a broad view of the conceptualiser and functions as a global stimulus subsuming all parts of the act in provoking the description. The parts include both the complement content which functions as a central component, and the general circumstances surrounding its occurrence. The source of the conceptualiser's description in (5b) is therefore somewhat larger in scope than in (5a). A list of adjectival predicates expressing difficulty or ease includes *difficult*, *easy*, *hard*, *plain*, *practicable*, *simple*, *tough*, etc.

The domain of modality involves other predicates expressing other meanings. Adjectival predicates expressing frequency include *common*, *customary*, *fashionable*, *habitual*, *rare*, *standard*, *traditional*, *usual*, etc. This is borne out by examples such as the following: *To*

see/Seeing tears at a farewell party is common vs. *It is common to see/seeing tears at a farewell party* vs. *Tears at a wedding are common to see*.

Let us third consider the domain of emotion, which I will exemplify by means of adjectival predicates expressing positive emotion, as seen in (6):

- (6) a. To remember old acquaintances is nice.
- b. It is nice to remember old acquaintances.

The non-extraposed variant in (6a) confers the focal status on the complement clause alone, and so assigns the entire complement clause the function of subject. In this construal, the complement clause is simply presented as a sole stimulus instigating the emotion in the conceptualiser. Merely the idea or the episode of remembering old acquaintances is sufficient to move the conceptualiser emotionally. The corresponding extraposed variant in (6b) confers the focal status on the global field, or the immediate scope, represented by *it*, and so assigns it the function of subject. In this construal, *it* represents the locus of the factors enticing the emotion in the conceptualiser. The factors include both the complement clause which serves as a central component, and the general considerations surrounding the act of remembering such as its effect on the viewer, his mind, his mood, etc. Such considerations are not directly available in the non-extraposed construction.

A collection of adjectival predicates expressing positive emotion includes *enjoyable*, *lovely*, *marvellous*, *nice*, *pleasant*, etc. Positive emotion can also be expressed by *-ing* participial predicates like *amusing*, *comforting*, *exciting*, *interesting*, *refreshing*, *satisfying*, *tempting*, *thrilling*, etc. This is manifested in terms of examples such as *To talk to people is interesting* vs. *It is interesting to talk to people* vs. *People are interesting to talk to*. A collection of adjectival predicates expressing negative emotion includes *awful*, *dreadful*, *horrible*, *ridiculous*, *terrible*, etc. This is illustrated by examples such as *To discuss sexual matters openly is horrible* vs. *It is horrible to discuss sexual matters openly* vs. *Sexual matters are horrible to discuss openly*. Negative emotion can also be expressed by *-ing* participial predicates like *alarming*, *disappointing*, *disconcerting*, *disturbing*, *embarrassing*, *irritating*, *shocking*, *terrifying*, etc. This is manifested in terms of examples such as *To see a rise in violent crime is alarming* vs. *It is alarming to see a rise in violent crime* vs. *A rise in violent crime is alarming (to see)*.

Let us fourth consider the domain of deontics, which I will exemplify by means of adjectival predicates expressing obligation, as seen in (7):

- (7) a. To follow the guidelines is mandatory.
- b. It is mandatory to follow the guidelines.

In the non-extraposed alternative in (7a), the whole complement clause is chosen as subject. The speaker takes a *narrow* view of the complement event, and considers its content the sole representative of the obligation. The guidelines, therefore, serve as the sole deontic force which renders the occurrence of the complement content necessary. In the extraposed alternative in (7b), the global field, or the immediate scope, represented by *it* is chosen as subject. *It* represents a global stimulus subsuming the general circumstances which surround the occurrence of the complement event. The speaker takes a *broad* view of the complement event, and considers all its parts together in representing the obligation. The parts include

both the complement content which functions as a central component, and the general circumstances surrounding its occurrence, its consequences whether direct or indirect, its effects whether immediate or distant, etc. The source of the speaker's evaluation in (7b) is therefore somewhat larger in scope than in (7a).

A handful of adjectival predicates expressing obligation includes *crucial*, *essential*, *imperative*, *incumbent*, *mandatory*, *necessary*, etc. The domain of deontics involves other predicates expressing other meanings. A handful of adjectival predicates expressing permission includes, *admissible*, *allowable*, *permissible*, etc. This is shown in examples such as *To make a certain level of error is allowable* vs. *It is allowable to make a certain level of error* vs. *A certain level of error is allowable*.

Let us finally consider the domain of epistemics, which I will exemplify by means of adjectival predicates expressing possibility, as seen in (8):

- (8) a. To win the game is possible.
- b. It is possible to win the game.

The non-extraposed instance in (8a) places the primary focus on the complement clause alone. The whole complement clause is made the primary figure in the profiled relationship, and so coded as the clausal subject. In this construal, the speaker often looks at the complement clause as being alone the subject of the possibility. The extraposed instance in (8b) shifts the primary focus away from the complement clause and places it on the global field expressed by *it*. *It* is made the primary figure in the profiled relationship, and so coded as clausal subject. *It* represents the immediate scope or the relevant scope of awareness, and therefore highlights the range of considerations that can be brought to bear for the possibility. In this construal, *it* brings into the picture clues of various kinds, which help the conceptualiser to expect that the complement event will happen. Such clues include, for example, the competitive spirit of the players, the strong support of the fans and the optimum atmosphere of the game.

Adjectival predicates expressing possibility include *possible*, *impossible*, etc. The domain of epistemics involves other predicates expressing other meanings. A constellation of adjectival predicates expressing certainty includes *clear*, *conceivable*, *evident*, *likely*, *obvious*, *probable*, *self-contradictory*, *true*, etc. This is shown in examples such as *That the project will succeed is likely* vs. *It is likely that the project will succeed*. Linguistically, the complement clause is rarely represented by the *to*-infinitive and often by the *that*-clause.

Certainty is also symbolised by predicates denoting impression such as *appear*, *seem*, etc. In atemporal complementation, the use of a non-extraposed construction is infelicitous as in **To be significant the difference appears*. Likewise, the use of an extraposed construction is infelicitous as in **It appears to be significant the difference*. This is so because predicates cannot exist on their own; there is a hole in their semantic structure which needs to be filled. With these predicates, the object noun phrase within the complement clause should always be placed in profile, and the complement clause should always come later, as in *The difference appears to be significant*. In processual complementation, these predicates do not occur in a non-extraposed construction as in **That the difference is significant appears*. The infelicity of the construction shows that the complement clause itself cannot per se constitute a stimulus to precipitate the judgement. Rather, they occur in an extraposed construction as in *It appears that the difference is significant*. The immediate scope profiled by *it* provides the

conceptualiser with a broader scope in precipitating the statement expressed in the complement clause.

In addition to adjectival predicates, nominal predicates also can take as their subject a complement clause or impersonal *it*. The predicates belong to one of the following domains.

- (i) Evaluation, difficulty as in *To complete work to standard and on time is a burden* vs. *It is a burden to complete work to standard and on time*; morality as in *To dodge a transport fare is an abuse* vs. *It is an abuse to dodge a transport fare*; intellectuality as in *To speak foreign languages is an advantage* vs. *It is an advantage to speak foreign languages*; and recurrence as in *To have a single child is a commonplace* vs. *It is a commonplace to have a single child*.
- (ii) Emotion, as in *To reach a compromise is a relief* vs. *It is a relief to reach a compromise*, and *To drive a car round a crowded city is hell* vs. *It is hell to drive a car round a crowded city*.
- (iii) Deontics, as in *To have a reasonable proficiency is a prerequisite* vs. *It is a prerequisite to have a reasonable proficiency*.
- (iv) Epistemics, as in *To travel round the world is a fancy* vs. *It is a fancy to travel round the world*. Besides, there are a few noun phrases which take as their subject either a complement clause or impersonal *it*. These include *a good idea, a good thing, an odd way, no use, no good, a bad taste, fair play, the fashion, a nasty surprise, a tragedy, a great disappointment, etc.* This is shown in *To try again is a good idea* vs. *It is a good idea to try again*.

Although they are rare, verbal predicates can also take as their subject a complement clause or impersonal *it*. The relative rarity of verbal predicates is the result of two factors. Syntactically, they are less likely to undergo extraposition because they are usually longer and contain more information than adjectival and nominal ones. Semantically, unlike adjectival and nominal predicates which are mostly stative, verbal predicates are dynamic. Verbal predicates belong to one of the following domains.

- (i) Evaluation, as in *To appear before a TV camera requires an effort* vs. *It requires an effort to appear before a TV camera*.
- (ii) Emotion, as in *To work abroad appeals to everyone* vs. *It appeals to everyone to work abroad*.
- (iii) Deontics, as in *To smoke in the building lies under the ban* vs. *It lies under the ban to smoke in the building*.
- (iv) Epistemics, as in *To get a job in a city stands a good chance* vs. *It stands a good chance to get a job in a city*.
- (v) Causation, as in *To see the scenery makes one happy* vs. *It makes one happy to see the scenery*.
- (vi) Quality, as in *To be a long-distance runner takes strength and stamina* vs. *It takes strength and stamina to be a long-distance runner*.
- (vii) Time, as in *To fix the washing machine takes three hours* vs. *It takes three hours to fix the washing machine*.
- (viii) Price, as in *To renovate a house costs a fortune* vs. *It costs a fortune to renovate a house*.

CONCLUSION

This paper has substantiated two fundamental tenets of CG. One tenet is that all elements posited in grammar are meaningful. The paper has shown that *it* is meaningful in all its uses, adding semantic import to the construction in which it appears. The meaning of *it* comprises a complex category with extended senses radiating from a prototype. Like any other lexical item or grammatical marker, *it* has both prototypical and peripheral senses. The prototypical sense relates to the physical domain, whereas the peripheral sense relates to abstract domain. Prototypically, it is used as a referring pronoun, referring back to something concrete like object, place, organisation, animal, etc. Extended from this is the sense when *it* refers back to something abstract like emotion, concept, state, situation, etc. Peripherally, *it* is used as a non-referring pronoun, profiling a setting, containing the content of a clause. Some settings are construed as profiling a physical area encompassing a particular event. Others are construed as profiling a mental space within which an event represented by a complement clause takes place.

The other tenet is that the form of a construction is characterised in terms of the construal imposed on its scene. *Construal*, is the ability to conceive and express a situation in different ways. Two types of construal apply to the analysis of *it*. One is *profile*, the conceptual unit within an expression which serves as a focal point. Linguistically, the profiled unit is represented by impersonal *it* and placed in subject position, designating a setting within which an event occurs. Another is *scope*, the range of conceptual content taken to describe a situation, which can be either *narrow* or *broad*. Linguistically, *narrow* scope is represented by a non-extraposed construction, where the speaker considers a minimal range of content in describing the situation. The small scope represented by the complement clause has been found to be solely responsible for the speaker’s evaluation. By contrast, *broad* scope is represented by an extraposed construction, where the speaker takes a maximal range of content in describing the situation. The large scope represented by both the complement clause and the general circumstances, profiled by *it*, have been found to be responsible for the speaker’s evaluation. The construal imposed on a scene is then the key element in explaining the specific form of a construction.

Table 1. Analyses of the impersonal pronoun it

Syntactic Analyses	Semantic Analyses	Cognitive Analyses
1. It is called a meaningless dummy pronoun. It is used to anticipate the subject. 2. It is called a meaningless expletive pronoun. It fills the gap left by the transformation of extraposition.	1. It is considered a meaningful morpheme. It has the property of ambience, i.e., it evokes the idea of generality. 2. It is as a cataphoric pronoun. It shows how important the referent in the upcoming discourse is going to be.	1. It is considered a presentational frame. It introduces a situation of some sort. 2. It profiles a field of awareness. It codes some kind of general circumstances surrounding an event.

Table 2. Functions of it in extraposed constructions

stylistic	<i>It</i> gives a construction the tinge of an informal style.
Syntactic	<i>It</i> allows moving heavy clauses to the end of a construction to facilitate production.
functional	<i>It</i> places new information at the end of a sentence to receive focus.
cognitive	<i>It</i> takes a broad view of a situation. It represents a global stimulus subsuming the general circumstances which are responsible for inducing the experience in the speaker.

The impersonal *it* has received different analyses. Each analysis is a reflection of the underlying assumptions of the theory it adopts. The table below summarises the analyses.

One construction in which the pronoun *it* occurs is referred to as extraposed. Its function in such a construction has also received different analyses. The table below summarises the analyses.

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Chapter 75

**ICONICITY, SUBJECTIFICATION AND DOMINION
IN PORTUGUESE CONCESSIVE CLAUSES:
CONCEPTUAL DIFFERENCES
BETWEEN CONCESSIVE CLAUSES
INTRODUCED BY *APESAR DE* AND *EMBORA***

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ABSTRACT

The present paper analyses Portuguese concessive constructions introduced by *apesar de* ('in weight of') and *embora* (from Old Portuguese *em boa hora*, 'in good time'). From the standpoint of Cognitive Grammar, it is argued that the constructions display a prime example of iconicity. Thus, it is shown that iconic principles such as linear ordering, formal complexity and formal distance explain the reason why the *apesar de* construction prototypically designates a more direct concessive relation, while the *embora* construction designates a more complex relation to the main clause. Further, it is claimed that the complex relation between the *embora* construction and the main clause represents a prime example of subjectification. Finally, the analysis shows that the subjunctive mood in the *embora* construction is related to the notion of dominion.

Keywords: cognitive grammar, concessive constructions, dominion, iconicity, subjectification

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1. INTRODUCTION

The assumption that meaning is first and foremost related to lexicon, while syntax represents an autonomous component of language without meaning, is still dominant in much of current linguistic theorizing. During the last decades, however, functional and cognitive approaches to language and linguistic analysis have put focus on the relation between language structure and semantic meaning. For example, the model of Cognitive Grammar [Langacker 1987, 1991, 2008] puts forth that grammar (including syntax), lexicon and morphology represent a continuum of symbolic structures with inherent semantic meanings. Also, Haiman's [1980, 1985] studies on *iconicity* in language emphasize the relation between language structure and conceptual structure.

The perspective taken in the present paper is consistent with these latter approaches to linguistic analysis. Accordingly, the paper analyses finite and infinitive concessive clauses introduced by the prepositional expression *apesar de* ('in weight of') and by the conjunction *embora* (from Old Portuguese *em boa hora*, 'in good time') with the intention to ferret out the relation between the structural and semantic properties of these constructions. Throughout the paper, it will be shown that these structures reveal a noteworthy relation between language structure and semantic meaning.

It is a well-known fact that a fundamental property of concessive constructions is that they designate two events that in some way are incompatible with each other [cf. König 1986, 1988; Crevels 2000]. That is, one event is being brought about in spite of another event. This property has often led to the conception of a negated causal relation – the event expressed in the main clause is not accomplished *because* of the subordinate event, but *in spite* of it. The relation is frequently formalized as *although P, Q* [cf. Verhagen 2000; König and Siemund 2000]. The position taken in the present paper does not challenge this view. However, from a Cognitive Grammar perspective [Langacker 1987, 1991, 2008] of language, it will be shown that finite and infinitive Portuguese concessive constructions introduced by the prepositional expression *apesar de* and by the conjunction *embora* behave rather differently with respect to the canonical *although P, Q* formula.

The claim made is that the formal differences between these concessive clauses may find a conceptual explanation in notions like *iconicity*, *subjectification* and *dominion*. Thus, it will be shown that the formally weaker concessive clauses, introduced by the prepositional expression *apesar de*, prototypically designate a direct and observable concessive relation with the main clause event. On the other hand, the formally more complex concessive clauses, introduced by the conjunction *embora*, are more mental in character, frequently expressing the conceptualizer's reasoning and propositional attitude. In this sense, it will be shown that the clauses introduced by *embora* often deviate from the prototypical description of a concessive relation between two events.

The formal differences between Portuguese concessive clauses introduced by *apesar de* and *embora* are exemplified in examples (1-2) below:

- 1) ...Apesar de já passar da meia-noite, se
 ...PREP:CONC. already pass-INF. of midnight, CLITIC.PRON.
encontrava bastante gente.
 find-IMP: 3P.S quite people.

[Diário de Aveiro-N1483-1].¹

‘In spite of it being past midnight, there were quite a lot of people there.’

2) Este objectivo embora fosse meritório, revelava-

This objective CONJ:CONC. be-IMP.SUBJ: 3P.S praiseworthy, reveal-IMP: 3P.S.

se pouco interessante para a comunicação social.

CLITIC.PRON. little interesting to the mass-media.

[Diário de Aveiro-NO766-1].

‘This aim, although it was praiseworthy, proved to be of little interest to the mass media.’

One formal difference between (1) and (2) is related to the linguistic unit introducing the concessive clause – a prepositional expression in the first example and a conjunction in the second. Further, the prepositional expression in (1) is followed by an infinitive construction with the verb *passar* (‘to pass’). In Portuguese, this verb form does not express tense, but it may have personal inflection.² On the other hand, the conjunction *embora* is generally followed by a finite clause with the subjunctive mood of the verb (*fosse*), expressing both tense and person.

The hypothesis put forward in the present paper is that the formal differences attested above entail a difference in conceptual content. In accordance with Haiman [1980, 1985], I will show that the different structures with *apesar de* and *embora* are iconically motivated and that they, in fact, may be explained by the following iconic principles: (1) the principle of linear ordering, (2) the correlation between formal and conceptual complexity, and (3) the correlation between formal and conceptual distance. Hence, the formal difference between the two structures will reflect the conceptual differences.

Further, these conceptual differences will lead to a higher degree of subjectification in the finite structures than the infinitive structures. As will be shown throughout the analysis, the finite structures lend themselves to a more complex and elaborated communicative content than the infinitive structures. This conceptual content, often of a mental character, can be considered a prime example of subjectification. From Traugott’s perspective [1989, 1995, 1996] it subsumes internalization and propositional attitude; and from Langacker’s point of view [1990, 1999, 2003, 2006] it entails the mental scanning of a subjectively construed conceptualizer. This being so, it will be shown that concessive structures in Portuguese provide another noteworthy connection between linguistic iconicity and subjectification [cf. Vesterinen 2010a].

The analysis also aims at explaining the subjunctive mood in the finite concessive clauses. In doing so, special attention will be given to the notion of *dominion* [cf. Maldonado 1995; Vesterinen 2006, 2008]. The present paper will show that the subjunctive mood appears in grammatical contexts where the conceptual content of the subordinate clause is outside the conceptualizer’s (the main clause subject or the speaker) dominion. This may come about in two different ways: (1) the event does not belong to the conceptualizer’s *elaborated reality* [cf. Achard 1998], and (2) the conceptualizer has a restricted possibility to actively influence

¹ The examples in the present paper are from the Portuguese corpora Linguatca (Diaclav). The name of the journal from which the example is extracted is indicated between square brackets.

² The inflected infinitive is a typical feature of the Portuguese language. The verb form is formed by adding a suffixal subject morpheme on the plain infinitive in the following manner: 1p.s: -ø, 2p.s: -es, 3p.s: -ø, 1p.p: -mos, 2p.p: -des, 3p.p: -em.

and manipulate the described event [cf. Vesterinen 2010b]. This being so, I will argue that the semantics of the subjunctive is closely related to the notion of dominion.

Finally, the analysis of Portuguese concessive structures raises the question whether conceptual notions such as iconicity, subjectification and dominion may account for similar structures in other languages. An interesting case in point is the occurrence of different types of concessive clauses in English, i.e., concessive clauses introduced by *although*, *even if* and *even though*, on the one hand, and *in spite of* and *despite*, on the other. In fact, the difference between the former and the latter English concessive clauses bear some formal similarities with their Portuguese counterparts. This being so, it is very likely that the notions of iconicity, subjectification and dominion may shed some light over the conceptual meaning of English concessive clauses. A preliminary analysis will show that this may be a promising path for future investigation on English concessive structures.

The paper is organized in the following way: Section 2 discusses the notion of iconicity. Section 3 is dedicated to subjectification. Section 4 will furnish an explanation on the notion of dominion. The analysis of Portuguese concessive clauses with *apesar de* and *embora* is the topic of section 5. Section 6 provides a preliminary analysis of English concessive clauses. Finally, in section 7, some general conclusions will be offered.

2. ICONICITY

It is a common view that any given language consists of signs that do not necessarily resemble the referent that they designate. The relation between the sign and its referent is in most cases arbitrary. From a Cognitive Grammar perspective, the relation between a sign and the referent is understood as a symbolic relation between a semantic pole and a phonological pole, i.e., the linguistic expression [cf. Langacker 1987: 77]. In view of this fact, it may seem contradictory to claim that languages are iconic in character.

However, as Haiman [1980: 515] eloquently points out, this apparent contradiction may be explained by the notion of *diagrammatic iconicity*. To begin with, an iconic image displays a certain resemblance with its referent; prototypical cases would be a statue, a photograph or – in the case of human languages – onomatopoeic words. An iconic diagram, in contrast, is a systematic arrangement of signs that do not resemble their referent, but whose relationship with each other reflects the relationships of their referents. Put another way, a diagram does not resemble the concept that it represents, but it conveys a relation in which each symbol in the diagram represents a specific part of the concept. Correspondingly, linguistic symbols do not need to share any resemblance with the concept they represent. Nevertheless, the way we organize linguistic symbols (the grammar) is iconic: every symbol has a counterpart in the concept that it represents [cf. Haiman 1985].

Haiman [1985] presents two hypotheses related to the notion of diagrammatic iconicity. The first one, called *the isomorphism hypothesis*, states a *one-to-one correspondence* between a linguistic sign and its referent. The second one, known as *the motivation hypothesis*, states that the formal differences between two contrasting forms reflect their semantic differences:

The Isomorphism Hypothesis

Different forms will always entail a difference in communicative function. Conversely, recurrent identity of form between different grammatical categories will always reflect some perceived similarity in communicative function.

The Motivation Hypothesis

Given two minimally contrasting forms with closely related meaning, the difference in their meaning will correspond to the difference in their form [Haiman 1985: 19-20].

Obviously, the isomorphism hypothesis rejects the idea of full synonymy. Even though many linguistic signs share some semantic features, they will always entail some differences in communicative function. One example of this is found in the occurrence of different words designating a person with the feature [+MALE / +YOUNG] in English. Certainly, the words *boy*, *lad* and *guy* signal some communicative differences with respect to how we perceive the referent. It is also noteworthy that the second part of the isomorphism hypothesis may account for cases of polysemy – in cases where a form has more than one meaning, it is most likely that these meanings are related. In addition, the motivation hypothesis establishes a relation between linguistic forms and diagrams. If each part of a diagram represents a certain part of a concept, it is also very likely that each part of a linguistic form represents a certain part of a conceptualization. Thus, a difference in form between two minimally contrasting linguistic expressions will correspond to their different meanings.

The notion of diagrammatic iconicity is also present in Lakoff and Johnson [1980] and the metaphor [LINGUISTIC UNITS ARE CONTAINERS]. This metaphor precedes the expectations *more of form is more content* and *closeness is strength of effect*. The first expectation is an iconic relation in which the addition of linguistic units correlates with more content, while the second one is a relation between formal and conceptual distance. Let us consider some examples from Lakoff and Johnson [1980: 127-129]:

- 3) *He ran.*
- 4) *He ran and ran and ran and ran.*
- 5) *Mary doesn't think he will leave until tomorrow.*
- 6) *Mary thinks he won't leave until tomorrow.*

The semantic difference between (3) and (4) is rather obvious. The sentence *He ran* in (3) indicates that the subject was involved in the action of running, and would be considered as the “normal” way of indicating this kind of activity. The reduplication of the verb in (4), on the other hand, implies an extended activity, i.e., that the participant ran considerably more than in example (3). In the following example (5), the negative transportation places the negation further away from the predicate that it logically negates (*leave*) than in (6). This negative transportation is said to have the effect of creating a weaker kind of negation [Lakoff and Johnson, 1980: 129].

Another iconic relation, mentioned both in Lakoff and Johnson [1980] and Langacker [1987], is the way in which a successively greater formal distance between cause and effect correlates with a greater conceptual distance between cause and effect:

- 7) Sam killed Harry.
- 8) Sam made Harry die.
- 9) Sam caused Harry to die.
- 10) Sam brought it about that Harry died.

In these examples, a successively greater formal distance between the causal predicate and the one of effect tends to signal a more indirect (or diffuse) causation. In (7), for instance, the juxtaposition SN + V + SN signals a prototypically direct causal relation, while, in (10), the greater distance between these linguistic units implies an indirect one. Langacker [1987] comments on this phenomenon with the following words: “Such paradigms indicate that greater phonological distance between a predication of cause and one of effect correlates with greater conceptual distance in the domains of cause-effect linkages” [Langacker 1987: 181].

To summarize, the notion of iconicity rests on the assumption that linguistic forms and structures can be understood as diagrams. Thus, the isomorphism hypothesis posits a one-to-one correspondence between form and meaning, and the motivation hypothesis defends the idea that formal differences reflect conceptual ones. If we relate these hypotheses to infinitive and finite concessive clauses with *apesar de* and *embora*, the result is that these clauses cannot be regarded as synonymous. First, one form corresponds to one meaning. Secondly, the formal differences will reflect some conceptual differences.

3. SUBJECTIFICATION

Subjectification as a linguistic phenomenon has primarily been analysed from two different – and in some cases competing – perspectives in cognitive and functional approaches to linguistic analysis [cf. Traugott 1989, 1995, 1996; Langacker 1990, 1999, 2003, 2006]. Traugott focuses mainly on the diachronic aspect of subjectification and defines it as “the historical pragmatic-semantic process whereby meanings become increasingly based in the speaker’s subjective belief state or attitude towards what is said...” [Traugott 1996: 185]. In other words, the notion of subjectification is very much equated with the speaker’s subjective judgement and propositional attitude towards the proposition. In Traugott’s framework, the path towards subjectification involves three tendencies:

Tendency 1: Meanings based in the external described situation > meanings based in the internal (evaluative, perceptual, cognitive) described situation.

Tendency 2: Meanings based in the external or internal described situation > meanings based in the textual and metalinguistic situation.

Tendency 3: Meanings tend to become increasingly based in the speaker’s subjective belief/state toward the proposition [cf. Traugott 1989: 34-35].

An example of Tendency 1 is the shift in meaning of *boor* (farmer > crude person). Another is the Old English *felan* that initially only had the meaning “touch” and did not acquire a perceptual meaning until late Old English. Both cases imply a shift from a concrete domain to an abstract domain. Tendency 2 includes the development of morphological and lexical forms into connectives coding the textual situation and the shift from mental-state to

speech-act verb meaning, i.e., *observe* (perceive > state that). Finally, Tendency 3 is exemplified by the shift of the temporal adverb *while* into a concessive, and the development of the action verb *go* to have a temporal meaning of immediate planned future [cf. Traugott 1989: 34-35].

Langacker [1990], analysing the notion of subjectification mainly from a synchronic point of view, defines it as “the realignment of some relationship from the objective axis to the subjective axis” [Langacker 1990:13]. This definition relates to the asymmetry between *the ground* (in the subjective axis) and the object of conception (in the objective axis) as a matter of *construal* and *perspective*, dimensions that include notions like *vantage point* and *viewing arrangement*. The term *ground* is used for the speech event, i.e., the speaker, the hearer and the time and place of speaking. The speaker is the primary subject of the conceptualization (the conceptualizer). The ground is said to be subjectively construed when left “offstage” as an unprofiled facet of the speaker’s conceptualization. The object of conception is objectively construed if it is well delimited from the ground. A finite clause has the effect of maximizing the asymmetry between the subject and the object of conception [cf. Langacker 1990: 14-15].

In more recent works, Langacker [1999, 2003, 2006] has redefined subjectification as semantic *bleaching* or *fading away*. The mental scanning of a subjectively construed entity is there all along and emerges – or becomes more evident – when the object of conception “is no longer there to mask it” [Langacker 2006: 21]. Put another way, the mental scanning of the ground is constantly present, but becomes more obvious when the described situation lacks objective movement. This situation is exemplified in (11-12) with the different senses of the preposition *across*:

- 11) A giant chicken marched angrily across the street.
- 12) There’s a KFC outlet right across the street.

The first example (11) describes a situation where the subject successively occupies all the positions indicated by the prepositional phrase *across the street*. Evidentially, the ground is also scanning this situation as it occurs as an offstage participant of the objective scene. In (12), however, there is no longer any objectively construed movement. The subject (*a KFC outlet*) is occupying a single location, i.e., the end of the path described by *across the street*. The only thing moving is the ground, which is scanning mentally along the path in order to localize the KFC outlet. The difference between (11) and (12) is illustrated in Figure 1.

In the moving sense of *across*, illustrated in (A), the ground (G) scans the objective scene, i.e., the movement of the subject that is crossing the street. The movement of the subject is illustrated by the connected circles that traverse the landmark (the street). In contrast, there is no physical movement to be scanned in the static sense of *across*. The objective scene lacks motion. That is, the objective movement in (A) has been replaced by subjective movement in (B). It is the conceptualizer, as subject of conception (the ground), that mentally scans along the path with the intention of locating the subject (*a KFC outlet*). As Athanasiadou *et al.* (2006: 3) point out, this shift constitutes a change in the locus of activity. It is now the conceptualizer, and not the subject, who is the active participant. This phenomenon, also termed *attenuation* in Langacker’s framework, is a fundamental trait of subjectification, and involves a loss of subject control and a shift in domain from an active subject to the conceptualizer [cf. Langacker 1999].

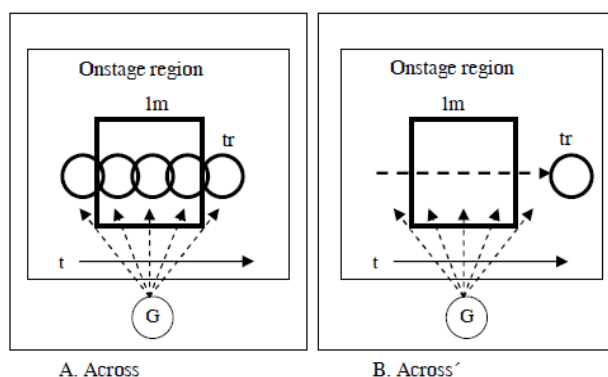


Figure 1. Subjectification of across [cf. Langacker 2006: 23].

Despite the differences, both Traugott's and Langacker's approaches to subjectification will be considered in the present study. In the first place, it is very likely that Tendency 1 and Tendency 3 in Traugott's approach to subjectification are relevant features in the variation between infinitive and finite concessive clauses with *apesar de* and *embora*. This will be confirmed in a higher degree of internalization and personal beliefs in the finite clauses than in the infinitive ones. In the second place, the claim made in this paper is that the finite concessive clauses often display inferential features. That is to say, the conceptualizer shows evidence of personal inferences about how the world is shaped. This subsumes that a subjectively construed conceptualizer is mentally scanning between two events that do not need to have any visible relation in the outside world. This is understood to be Langacker's view of subjectification.

4. DOMINION

The term *dominion* refers to the relation between a conceptualizer, on the one hand, and an event or a proposition, on the other. The notion was primarily established in order to account for possessive relations as a component of the *reference-point model* [cf. Langacker 1991: 169-172]. Analysing the complexity of possessive constructions, Langacker [1991] states that the schematic meaning of possessive constructions is related to the existence of two entities in the same cognitive domain. Thus, abstract possessive relations like: *We have a lot of animals in this region* may be explained in the same manner as more prototypical possessive relations, e.g., *My car*. The common denominator is the existence of two entities in the same cognitive domain.

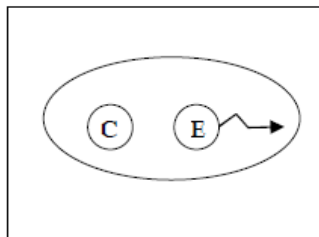
Maldonado [1995] builds on the reference-point model and on the notion of abstract possession, proposing that not only things but also propositions and events are candidates for entering into the conceptualizer's dominion as "possessed" entities. The author connects this feature to the notion of *elaborated reality* [Achard 1998]. If an event or a proposition is a part of the conceptualizer's conception of reality, the event (or the proposition) is located in the dominion of this participant. The conception of reality as evolving through time, rather than as a stable component, subsumes that not only the history of events is considered in relation to reality but also not yet realized events. That is, our knowledge of how the world has

evolved until now gives us the confidence to predict future events as more or less integrated in our conception of reality.

This tendency is reflected in expressions like *I know that Mary will come*, *We will go to Spain this summer* and *I will go to work tomorrow*. The history of events provides us with the conviction that the future event will happen. For example, I may have had an earlier conversation with Mary in which she promised to come, or I may have made plans to go to Spain with my family this summer. Finally, the habit of going to work five days a week makes it rather easy to predict that I will go there tomorrow as well, provided some unplanned event does not alter the course of events. In sum, our experience as human subjects living in the world makes it possible to integrate future events into our conception of reality and, thus, into our dominion.

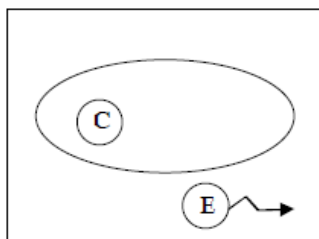
Obviously, some events are excluded from the conceptualizer's conception of reality. If the evolution of the past (until now) has not favoured the occurrence of these events, it is not very likely that the conceptualizer will regard them as a part of his conception of reality. In these cases, when the conceptualizer is not committed to the event as a "real" entity, the event is located outside the dominion of the conceptualizer. Figure 2 illustrates the difference between events located inside or outside the conceptualizer's dominion:

a)



Inside.

b)



Outside.

Figure 2. Events located inside and outside the conceptualizer's dominion.

The circle with the letter (C) indicates the conceptualizer. In a multi-clausal expression, this participant is normally equated with the main clause subject. That is, an expression like *Peter thinks it will rain*, expresses the conceptualization of the main clause subject. Thus, the event is in the dominion of this participant. This situation is illustrated in (A). On the other hand, the expression: *Peter does not think it will rain* designates that the event is located outside the dominion of the main clause subject (Figure 2B). Obviously, the speaker is the conceptualizer of the linguistic expression, but the main clause subject is the

conceptualizer of the subordinate event [cf. Langacker 2004]. As for concessive constructions, the analysis in the present paper will show that the concessive relation is primarily considered from the vantage point of the speaker. Hence, the speaker is the conceptualizer of the concessive relation.

Another facet of events located inside or outside the conceptualizer's dominion refers to his/her capacity to actively manipulate and influence the described event. Langacker [2004] uses the term *control cycle* in order to describe this experience and points out that: "being alive is to function as actor in control cycles, interacting with the environment to gain control over certain facets of it" [Langacker 2004: 537]. That is, events that we are able to control are located inside our dominion. Evidently, there are a lot of events in our daily life that we can actually influence and manipulate. If I am hungry, I can easily choose to do something about it, if I am tired, I can take a nap etc. Socially, we establish stable relations with certain rules and expectations that increase the notion of control. In the same way that the history of events makes it possible to predict or exclude future events, the social organization of human life entails that we have the possibility to exert control over some events and have a lesser degree of control over others.

At this point, two interrelated questions need to be clearly spelled out. First, the notion of dominion does not refer to an objective world "out there" that is independent of human conceptualization. Rather, it is the relation between the conceptualizer and the described event that is in focus. Put in other words, the notion of dominion highlights the relation between the conceptualizer and the conceptualized event. This relation is further expressed by linguistic means. Thus, the way in which the conceptualizer describes the event also shows how he/she conceptualizes it in relation to the notion of dominion. In this sense, the conceptual content of the main clause directs focus to the relevant dominion. The following examples may illustrate the question:

- 13) It is raining.
- 14) I do not believe that it is raining.
- 15) I know that it is raining.
- 16) It is a pity that it is raining.

At a first glance, the first example (13) seems to be neutral regarding the notion of dominion. However, the conceptualizer integrates the event into his/her conception of reality. The main clause of example (14), on the other hand, explicitly expresses that the subordinate event is located outside the epistemic dominion of the conceptualizer. This is indicated by the negation of the main clause verb ('*believe*'). The reverse situation is at hand in (15). The main clause expression *I know* also directs focus to the epistemic dominion, but the expression designates an event that is located inside the conceptualizer's epistemic dominion. Finally, example (16) designates an event that is inside the epistemic dominion of the conceptualizer. However, the main clause *It is a pity* designates the conceptualizer's attitude towards the complement event. Consequently, the conceptual content of the main clause directs focus on the conceptualizer's *dominion of active control* – and the fact that the conceptualizer has a restricted capacity to influence and manipulate the event.

It is noteworthy that examples like (13-16) are related to mood choice in Portuguese. If the main clause designates that the complement event is inside the conceptualizer's epistemic dominion, the complement event is described with the indicative mood. Thus, expression like

I know, I believe, I think etc. take an indicative complement. If the conceptualizer, on the other hand, does not incorporate the main clause event in his/her epistemic dominion, the subjunctive mood is chosen. Therefore, the negative counterparts of *I know, I believe* and *I think* take a complement in the subjunctive mood. Furthermore, the subjunctive mood appears in factive contexts. Expressions like *it is a pity, I regret* and *it is a shame* take a subjunctive complement. The common denominator for these expressions seems to be that they designate that the complement event is outside the conceptualizer's dominion of active control [cf. Vesterinen 2010b].

In sum, the notion of dominion is not related to an objective reality, but to the relation between the conceptualizer and the outside world. Further, the way in which the notion of dominion is evoked depends on the linguistic context. If the linguistic context refers to the conceptualizer's epistemic position towards the event, the epistemic dominion is evoked. If it refers to the conceptualizer's personal attitude towards the event, the dominion of active control is evoked. Therefore, there is no request for both facets of dominion to be equally considered. Rather, the linguistic context evokes different dominions.

5. APESAR DE AND EMBORA: ICONICITY, SUBJECTIFICATION AND DOMINION

The linguistic material consists of 300 cases that have been extracted randomly from the Portuguese corpus *Linguatca*. Each construction is represented with 150 examples. It should be made clear that there is no clear-cut division between the analysed concessive clauses in this section. The APESAR DE CONSTRUCTION may occasionally designate conceptual meanings that are prototypical for the EMBORA CONSTRUCTION. Likewise, the EMBORA CONSTRUCTION may be used in contexts that are typical of the APESAR DE CONSTRUCTION. However, the analysis will show that there is a strong tendency for the two constructions to display totally different conceptual meanings.

5.1. Iconic Motivation

The sequential relation between the two events in a concessive relation is reflected by the formula *although P, Q*. That is, the event described in the concessive clause is sequentially prior to the event described in the main clause. This is not surprising, bearing in mind that the concessive clause expresses an obstacle that precedes the event in the main clause temporally. This being so, the formula *although P, Q* captures the iconic principle of linear ordering – the linear order of the formula parallels the sequential order of the events [cf. Haiman 1980]. Relating this phenomenon to Portuguese concessive constructions introduced by *apesar de* and *embora*, it is noteworthy that the constructions differ substantially regarding their position in relation to the main clause.

In fact, there is a strong tendency for *apesar de* to precede the main clause. The initial position exhibits 111 occurrences, while the final position only presents 39 occurrences. In contrast, the construction with *embora* shows the opposite pattern: only 40 examples precede the main clause, while the final position is at hand in 110 cases. A Chi-square test shows that

the association between the type of concessive construction and its position is considered to be extremely statistically significant, $X^2 = 65.336$, $df = 1$, $p < .0001$ (two-tailed). The results are shown in Table 1.

Table 1. The position of the concessive clause

	Initial position	Final position	Totals
Apesar de	111	39	150
Embora	40	110	150
Totals	151	149	300

Thus, the concessive construction with *apesar de* reflects the prototypical temporal order of events in a concessive relation. On the other hand, the construction with *embora* is totally opposed to this tendency, being preceded sequentially by the event that it is obstructing. In other words, if the construction with *embora* designates a concessive relation, this relation is not considered in relation to the ordering of events in the outside world. The analysis that follows will show that this is actually the case. Rather than expressing a concessive relation in the outside world, the construction introduced by *embora* gives evidence of the speaker's (conceptualizer's) attitude towards the main clause event. Even though this relation may have concessive features, it is more mental in character.

The formal position of the concessive construction has other iconic effects. In fact, the initial position of the construction with *apesar de* creates a formal closeness between the events described in the main and concessive clauses. On the other hand, the conjunction *embora* creates a formal distance between the events. The difference is exemplified below:

- 17) *Apesar de*: Prepositional expression + infinitive clause + main clause.
- 18) *Embora*: Main clause + conjunction + finite clause (subjunctive).

Thus, if formal structure reflects conceptual structure, which is a fundamental claim within the cognitive linguistic framework, the iconic principles of linear ordering, formal complexity and formal distance would entail that the formal differences between the constructions with *apesar de* and *embora* reflect their communicative differences. The formal closeness between the events described by the APESAR DE CONSTRUCTION and the main clause verb would reflect conceptual closeness. The linear order would reflect the canonical succession of events in a concessive relation. Finally, the formal complexity of the finite concessive construction would mirror conceptual complexity.

Table 2, below, corroborates this claim. In most cases, the clause introduced by *apesar de* designates a prototypical concessive relation with the main clause event. That is, the main clause event is brought about in spite of the concessive event. This relation is verified in 114 examples. The EMBORA CONSTRUCTION, on the other hand, only exhibits 54 occurrences with this feature. Instead, the latter frequently designates the speaker's reasoning and propositional attitude towards the main clause event, thus creating a mental concessive relation between the conceptualizer and the main clause event. Further, it often designates a circumstance that is related to the main clause event, not in a purely concessive relation, but a hypothetical one. The association between the type of concessive construction and its relation to the main

clause is considered to be extremely statistically significant, $X^2 = 47.091$, $df = 1$, $p < .0001$ (two-tailed). The results are shown in Table 2.

Table 2. The concessive relation

	(+) concessive	(-) concessive	Totals
Apesar de	114	36	150
Embora	54	96	150
Totals	168	132	300

The following examples with the APESAR DE CONSTRUCTION illustrate the tendency for the construction to designate direct concessive relations that are observable in the outside world:

19) Apesar de não conseguir eleger um deputado, a CDU
 PREP:CONC. not succeed-INF. elect-INF. a deputy the CDU
subiu de 2,74 por cento, em 1995, para 3,54 por cento.
 rise-PRET: 3P.S of 2,74 percent, in 1995, to 3,54 percent.
 [Diário de Aveiro-N1046-1].

‘In spite of not being able to elect a deputy, CDU rose from 2.74 percent in 1995 to 3.54 percent.’

20) e apesar de se estar perante uma actividade ilegal,
 and PREP:CONC. CLITIC.PRON be-INF. before an activity illegal
os empresários arriscam e, em muitos casos, preferem
 the businessmen risk-PRES: 3P.P and, in many cases, prefer-PRES: 3P.P.
pagar as coimas que lhes são aplicadas.
 pay-INF. the fine that them be-PRES: 3P.P enforce-PART.
 [Diário de Aveiro-N1433-1].

‘And in spite of knowing that it is an illegal activity, the businessmen take the risk and, in many cases, they prefer to pay the fine that they are given.’

21) Apesar da empreitada já ter sido concluída, a
 PREP:CONC. contract already have-INF. be-SUP. completed, the
artéria ainda não foi pavimentada.
 artery yet not be-PRET: 3P.S pave-PART.
 [Diário de Aveiro-N1058-1].

‘Although the contract had been signed, the arterial road has not yet been paved.’

The common denominator for the examples above (19-21) is that they display concessive relations that are related to events, states or affairs in the outside world. In (19), the relation is of the type: not succeed in electing a deputy > rise in popularity. In the following example (20), the concessive relation is between the events of knowing that an activity is illegal, on the one hand, and choosing to perform that activity, on the other. Finally, example (21) displays a relation between a business deal that is completed and the lack of fulfilling the terms of the business deal.

Another striking feature of the construction with *apesar de* is the great quantity of cases containing the perfect construction. The quantitative analysis reveals that 51 (34%) of the 150 cases with *apesar de* contain the perfect construction, while the EMBORA CONSTRUCTION only exhibit 16 cases with this feature. Moreover, the semantics of the perfect construction is frequently considered in terms of *current relevance* [cf. Carey 1996; Dahl and Hedin 2000; Langacker 1991]. It is used in contexts in which the described event has some immediate consequences at the time of speaking.³ This being so, it is expected that the use of the perfect construction in concessive clauses tightens the concessive relation between the events, designating a more direct relation. The following examples may illustrate this direct relation:

22) Apesar de nos últimos anos não se terem verificado
 PREP:CONC. in the last years not CLIT.PRON. have-INF: 3P.P verify-SUP.
acidentes de monta, mandam as regras da segurança e
 accidents of mayor, order-PRES: 3P.P the rules of security and
da modernidade avançar-se.
 of the modernity advance-INF. CLITIC.PRON.
 [Diário de Aveiro-N0995-1].

‘Although there have only been a few accidents verified during the last years, they have decided to develop the security rules in the name of modernity.’

23) Apesar de ter efectuado uma segunda parte bem melhor,
 PREP:CONC. have-INF. make-SUP. a second part good better,
continuou a perder muitos ressaltos para o adversário.
 continue-PRET: 3P.S to lose-INF. many rebounds to the rival.
 [Diário de Aveiro-N1146-1].

‘In spite of having had a much better second half, the team still lost many rebounds to the other team.’

In fact, the use of the perfect construction in the examples above (22-23) seems to create a strong concessive relation between the two events. In (22), for example, the construction is used in an iterative context that conveys the idea of repeated events (or non events) that are opposed to the main clause event. That is, a reduced number of accidents have been witnessed during a period of time, including the time of speaking. In spite of this fact, the main clause subject decides to increase the security. Example (23) expresses a similar aspectual meaning. In this case, however, the temporal proximity between the concessive event and the main clause event is even stronger. That is, in spite of the improvement in the second half of the game, the team loses many rebounds to the other team. In sum, examples (22) and (23) convey the idea of concessive events that are utterly relevant for the main clause event – and for the concessive relation between the two events. Prototypically, the relation refers to events that are observable in the outside world.

³ See Paiva Boléo [1936], Costa Campos [1997] and Ilari [1997] for detailed studies on the Portuguese perfect construction and its relation to the moment of the uttering. Of special interest is the notion that the effect of the event described by the perfect construction persists in the reference time of the uttering, and that the perfect construction expresses repeated occurrences of an event.

The following cases show that the concessive construction with *embora* deviates rather substantially from the prototypical concessive relation. Rather, it designates events and circumstances pertaining to reasoning and propositional attitudes:

24) Recorde-se que este cargo de arcebispo

Remember-PRES.SUBJ: 3P.S CLITIC.PRON that this post of archpriest

só pode ser desempenhado por presbíteros embora

only can-PRES: 3P.S be-INF perform-PART. by priests CONJ:CONC.

os diáconos também participem na votação.

the deacons also participate-PRES.SUBJ: 3P.P in the voting.

[Diário de Aveiro-N0793-1].

'Remember that the post as archpriest is reserved for priests, even though deacons may participate in the voting.'

25) A vitória do Valonguense não sofre qualquer.

The victory of the Valonguense not suffer-PRES: 3P.S any

contestação, embora o Pinheirense...merecesse pelo

contestation, CONJ:CONC. the Pinheirense...deserve-IMP.SUBJ: 3P.S for the

menos o chamado golo de honra.

less the called goal of honour.[Diário de Aveiro-N1887-1].

'The victory of Valonguense is undeniable, even though Pinheirense deserved a consolation goal.'

26) Desta feita, um empate pode selar o compromisso

Of this made, a draw can-PRES: 3P.S seal-INF. the commitment

inicial, embora não seja de desprezar a possibilidade

initial, CONJ:CONC. not be-PRES.SUBJ: 3P.S. of despise the possibility

de um triunfo dos locais.

of a victory of the locals.

[Diário de Aveiro-N0689-1].

'Thus, a draw will mean that they have lived up to their initial expectations, even though one cannot exclude the possibility of a victory for the locals.'

27) Manuel Farias, presidente da junta de Ágeda não têm

Manuel Farias, Chairman of the committee of Ágeda not have-PRES: 3P.S

dúvidas em afirmar que o impacto positivo é maior,

doubts in declare-INF. that the impact positive be-PRES: 3P.S bigger,

embora reconheça que traga alguns

CONJ:CONC. admit-PRES.SUBJ: 3P.S that bring-PRES.SUBJ: 3P.S some

inconvenientes.

inconveniences.

[Diário de Aveiro-N0630-1].

'Manuel Farias, Chairman of the committee of Ágeda does not hesitate to point out that the positive impact is greater, even though he admits that it will lead to some inconvenience.'

Interestingly, examples (24-27) exhibit a more diffuse relation between the main clause and the concessive clause. In fact, the concessive clause introduced by *embora* does not designate a prototypical concessive relation between events. In (24), the relation is: the post is reserved for priests > deacons may vote. In (25), the concessive clause is related to the conceptualizer's personal opinion about *the consolation goal* and not to the fact that the victory was beyond doubt. Further, example (26) does not designate an observable concessive relation, but the conceptualizer's calculation about future events. Finally, the performative *reconhecer* ('admit') in (27) designates the conceptualizer's personal attitude towards the main clause event, and not a concessive relation in the world. This being so, it is the conceptualizer's reasoning and personal attitude towards the main clause event that is in focus, not the concessive relation between two events. This feature certainly entails a higher degree of subjectification in the EMBORA CONSTRUCTION than in the one introduced by *apesar de*. This feature will be the topic of the subsequent section.

5.2. Subjectification

The previous section focused on iconic principles such as linear order, formal complexity and formal distance. Thus, it was shown that these principles, in fact, may explain the conceptual differences between the APESAR DE and the EMBORA CONSTRUCTION. The present section will go one step further, proposing a relation between iconic principles and subjectification. That is, a higher degree of formal complexity – and formal distance to the main clause – in the EMBORA CONSTRUCTION will entail a higher degree of subjectification. Examples (24-27) in the previous section illustrated this tendency. The following examples may also serve as an illustration:

28) Mas é importante realçar que o mérito é

But be-PRES: 3P.S important highlight-INF. that the merit be-PRES: 3P.S

dos árbitros, embora seja verdade que os dirigentes

of the referees, CONJ:CONC. be-PRES.SUBJ: 3P.S truth that the managers

foram a coluna vertebral do trabalho desenvolvido de

be-PRET: 3P.P the column vertebral of the work develop-PART. of

então para cá.

then to here.

[Diário de Aveiro-N0270-1].

'But it is important to highlight the contribution of the referees, even though it is true that the major part of the work done until now was done by the managers.'

29) ...Embora não tivesse falado em números exactos

... CONJ:CONC. not have- IMP.SUBJ: 3P.S talk-SUP. in numbers exact

relativamente ao orçamento, não deixou de considerar que

regarding to the budget, not leave- PRES: 3P.S of consider-INF that

o mesmo irá ter valores compatíveis com as exigências.

the same go-FUT: 3P.S have INF. values compatible with the demands

da subida.

of the rise.

[Diário de Aveiro-N0185-1].

‘Even though he did not reveal exact figures from the budget, he did not hesitate to point out that it is in line with the demands of inflation.’

It is interesting to note that the relation between the concessive clause and the main clause is more related to the conceptualizer’s personal judgements than to concessive relations in the world. In example (28), the concessive clause designates how the conceptualizer evaluates the main clause event. In order to do so, the conceptualizer creates a situation that he/she considers to be opposed to the main clause event. Thus, the concessive relation is more related to the conceptualizer’s propositional attitude than to observable events in the world. This also holds for the subsequent example (29). The conceptualizer contrasts a main clause event that occurs in the outside world with his own reflection about the main clause event. That is to say, the conceptualizer creates a concessive relation between an event and his/her personal opinion regarding this event.

This tendency may be more emphasized. In many cases, the EMBORA CONSTRUCTION occurs in hypothetical contexts with a future projection. This feature was prominent in example (26). The following examples share this feature:

30) ...Ao Beira Mar apenas interessa a conquista de três pontos,
 ...To the Beira Mar only interest-PRES: 3P.S the conquest of three points,
que não garantem permanência porque os aveirenses
 that not guarantee-PRES: 3P.P the permanency because the Aveiro team
embora ultrapassem os adversários de hoje,
 CONJ:CONC. surpass-IMP.SUBJ: 3P.P their opponents of today,
na tabela classificativa, ficam com o mesmo número de
 in the table league, stay-PRES: 3P.P with the same number of
 (31) *de pontos.*

(31) of points.

[Diário de Aveiro-N0110-7].

‘The main aim for Beira Mar is to win three points, which however does not guarantee that they will escape relegation: even if the teams from Aveiro win against their opponents today, they will stay at the same position in the league table (31).’

31) Vamos aguardar pelo desenrolar da prova,
 Go-PRES: 1P.P look forward-INF. for the unwind-INF. of the test,
embora todos os indicadores apontem para que
 CONJ:CONC. all the indicators point-PRES.SUBJ: 3P.P to that
estejamos na presença de uma competição de
 be-PRES.SUBJ: 1P.P in the presence of a competition of
grande nível.
 big level.

[Diário de Aveiro-N0766-1].

‘We are looking forward to the development of the test, even though everything indicates that we will confront a high level of competition.’

This being so, a fundamental difference between the APESAR DE CONSTRUCTION and the EMBORA CONSTRUCTION relates to the character of the concessive relation. Prototypically, the former designates concessive relations between two observable events. The latter, on the other hand, tends to designate a relation between an event and the conceptualizer's propositional attitude regarding the event. This situation is indeed compatible with the notion of subjectification. From Traugott's perspective, the EMBORA CONSTRUCTION does not describe external properties of the described event, but internal (mental) ones. Further, the internalization equates with the conceptualizer's subjective belief state towards the proposition. Langacker's perspective of subjectification subsumes a loss of subject control and the mental scanning of a subjectively construed conceptualizer. This situation emerges in cases where the concessive clause does not designate an observable event, but the conceptualizer's propositional attitude towards the event. That is, in accordance with Figure 1, movement in the outside world is replaced by the conceptualizer's mental scanning.

A remaining question is why the EMBORA CONSTRUCTION and not the construction with *apesar de* displays subjectification. The most plausible answer to this question is that the tense feature of the finite verb has a grounding effect, i.e., that it locates the described event in relation to the ground (the speaker, the hearer and the circumstances of the speech event). As Langacker [1991] points out, one fundamental difference between grounded and ungrounded events is that the former create a relation to the conceptualizer's conception of reality and, thus, to his/her propositional attitude. The fact that verbs of propositional attitude like *know*, *think*, *believe* and *realize* take *that*-clauses is a direct consequence of this phenomenon. The complement event is grounded in relation to the speaker's conception of reality. On the other hand, verbs that designate perception (*see*, *hear*, *feel*) take infinitival complements. This is not surprising, given the fact that the event is observable in the outside world. Thus, the event does not need to be grounded.⁴

Relating the concessive clauses with *apesar de* and *embora* to the effect of grounding, it is interesting to verify a correlation. A concessive relation between events that are observable in the world does not need to be grounded. Thus, the prototypical conceptualization of these events is expressed by the use of the APESAR DE CONSTRUCTION. In contrast, propositional attitudes and mental experiences cannot be seen in the outside world. Hence, they need to be grounded. So, the EMBORA CONSTRUCTION creates this relation to the ground – and to the conceptualizer's mental world. In the subsequent section, it will be shown that the effect of grounding is highly relevant to the notion of dominion.

5.3. Dominion

The examples offered in previous sections revealed that the EMBORA CONSTRUCTION frequently occurs in hypothetical contexts in which the conceptualizer makes a prediction about future events. This feature was salient in examples (26), (30) and (31). For convenience, the English translation of these examples is given below:

⁴ However, it is interesting to note that these verbs take a *that*-clause when they designate the conceptualizer's mental experiences and inferential structures [cf. Vesterinen 2007].

- 32) ...Even though one cannot exclude the possibility of a victory for the locals.
 33) Even if Aveiro win against their opponents today...
 34) ...Even though everything indicates that we will confront a high level of competition.

The examples displayed above (32-34) share an interesting connection with other grammatical contexts in which the subjunctive mood occurs in Portuguese. The subjunctive mood appears in contexts where the conceptualizer is not committed to the truth of the proposition. For example, expressions like *não creio* ('I do not think/believe'), *duvido que* ('I doubt'), *é possível* ('it is possible that') and *é provável* ('It is probable') take a that-clause in the subjunctive mood. The subjunctive mood is, thus, connected to grammatical contexts in which the described event is located outside the conceptualizer's epistemic dominion. Consequently, it is not difficult to understand the reason why it appears in hypothetical contexts with the EMBORA CONSTRUCTION – it signals that the event is outside the conceptualizer's epistemic dominion. The following example may illustrate this tendency:

- 35) Mário Saldanha espera ter os pavilhões cheios,
 Mário Saldanha hope-PRES: 3P.S have-INF. the sports halls full,
embora em Faro o horário possa condicionar
 CONJ:CONC. in Faro the schedule can-PRES.CONJ: 3P.S condition-INF.
esse aspecto.
 this aspect.
 [Diário de Aveiro-N0333-1].
 'Mário Saldanha wishes to have full sport halls, even though the schedule in Faro may have an effect on this.'

In example (35), the EMBORA CONSTRUCTION designates the conceptualizer's personal beliefs regarding the possibility of having full sport halls. Even though this participant demonstrates an inclination towards rejecting the proposition, given the schedule of the event in Faro, he/she does not fully embrace the conceptual content of the EMBORA CONSTRUCTION. This being so, the EMBORA CONSTRUCTION frequently seems to designate events that are located outside the epistemic dominion of the conceptualizer [cf. also examples 26, 30, 31].

This automatically leads to occurrences presenting a direct concessive relation between two events. The character of these occurrences may at first sight create difficulties. Actually, the concessive clauses tend to describe an event that is outside the conceptualizer's dominion of active control – not only in the EMBORA CONSTRUCTION, but also in the APESAR DE CONSTRUCTION. The subsequent examples illustrate the problem:

- 36) *Apesar de discordar da estratégia, nunca deixou de*
 ...PREP:CONC. disagree-INF. of the strategy, never leave-PRET: 3P.S of
ter uma colaboração leal com o partido.
 have-INF. a cooperation loyal with the party.
 [Diário de Aveiro-N0622-1].
 'Although he disagreed about the strategy, he was always loyal to the party.'

37)...*O nosso concelho, embora ainda tenha carências,*
 ...The our county, CONJ:CONC. still have-PRES.SUBJ: 3P.S deficiencies,
já possui condições para se poder dar
 already own-PRES: 3P.S conditions to CLITIC.PRON. can-INF. give-INF.
este luxo.
 this luxury.
 [Diário de Aveiro-N1074-1].

‘Although our county still has its deficiencies, it has already shown such good potential that we can allow ourselves this luxury.’

Both (36) and (37) describe concessive events that are located outside the conceptualizer’s dominion of active control. In the first example (36), the fact that the subject in the concessive clause disagreed with the party about the strategy implies passionate discussions on the topic. It also implies that the speaker did not succeed in changing the ideas of the subject in the concessive clause. In (37), the concessive clause highlights the deficiencies of the region. This situation is opposed to the conceptualizer’s desire, but his/her force to actively change the situation is restricted. This being so, both the APESAR DE CONSTRUCTION and the EMBORA CONSTRUCTION designate events located outside the conceptualizer’s dominion.

However, it is pertinent to consider and contrast the semantic meaning of the infinitive and the subjunctive. By describing an event taking place in the world, the conceptualizer may choose to either describe the occurrence of the event or add his/her personal perspective on the event. Once again, this distinction relates to the effect of grounding. Given that events are visible in the outside world, they do not need to be grounded by a finite clause. On the other hand, thoughts and propositions about events are not observable in the outside world. For that reason, they need to be grounded. Therefore, the APESAR DE CONSTRUCTION describes an event, while the EMBORA CONSTRUCTION goes one step further. It not only describes an event, but it also describes the conceptualizer’s perspective on the event.

Furthermore, the subjunctive mood is closely related to grammatical contexts where the described event is located outside the conceptualizer’s dominion of influence and active control (cf. section 4). This being so, it is not difficult to understand the reason why it appears in certain concessive clauses. In contrast, the infinitive does not focus on this feature, but designates the mere occurrence of an observable event in the outside world. Therefore, the APESAR DE CONSTRUCTION and the EMBORA CONSTRUCTION highlight the iconic relation between grammatical structure and conceptual structure. Further, the EMBORA CONSTRUCTION provides evidence for the claim that the meaning of the subjunctive mood is closely related to the notion of dominion.

6. THE RELATION TO ENGLISH CONCESSIVE CLAUSES

The analysis offered so far confirms an iconic relation between infinitive and finite concessive clauses in Portuguese. Formally more complex concessive clauses correlate with conceptually more complex concessive relations, including the conceptualizer’s reasoning and propositional attitude towards the concessive relation. This being so, the finite clauses

also display a higher degree of subjectification than the infinitive clauses. Moreover, the analysis confirms that the subjunctive mood is consistent with the fact that concessive clauses prototypically are located outside the conceptualizer's dominion. On the other hand, infinitive concessive clauses tend to designate observable events in the outside world. In this section, a preliminary analysis of English concessive clauses will show that the notions of iconicity, subjectification and dominion may prove to be relevant in order to understand the conceptual content of English concessive structures.

It is a well-known fact that English concessive clauses are introduced by a conjunction taking a finite clause or by a prepositional expression taking a noun phrase or the progressive form of the verb. Common examples of the concessive conjunctions are *although*, *even if* and *even though*, while the prepositional expressions *despite* and *in spite of* are representative examples of the latter. A plausible hypothesis is that the occurrence of different structures is motivated by the conceptual content that they may evoke. The following examples are cases in point:

- 38) This is why she felt compelled to go behind his back and do the things that she did, although I do not excuse her actions. [www.enotes.com].
- 39) We'll enjoy church festival even if it rains. [www.worcesternews.co.uk].
- 40) My tax dollars also go to keep prisoners on death row even though I think the death penalty is morally wrong. [globalcomment.com].
- 41) In spite of the bad weather, we are going to have a picnic. [mtamrinh.blogspot.com].
- 42) Taiwan Democrats lose despite winning most votes.[www.fnfasia.org/index.].

Thus, the common denominator for the finite concessive constructions (38-40) is that they designate the conceptualizer's reasoning and propositional attitude towards the main clause event. That is, even though the relation may have concessive features, these are related to the conceptualizer's mental world and not to concrete manifestations in the outside world. In (38) and (40), the conceptualizer's involvement is particularly salient, expressing his/her opinion regarding the event described in the main clause. Furthermore, it is interesting to compare example (39) with (41). In fact, the finite expression *even if it rains*, in example (39) does not designate that it actually is raining, but is a hypothetical statement about a future event. In contrast, the prepositional concessive clause *in spite of the bad weather* designates a concrete situation. This feature is also at hand in example (42). The two clauses designate a concessive relation in the outside world: win most votes > lose elections.

The conceptual differences attested above reflect the iconic nature of language. The finite constructions are able to express thoughts and propositions about events taking place in the outside world, given their grounding effect, while non-finite constructions tend to describe concrete manifestations in the outside world. Consequently, this entails a higher degree of subjectification in the finite clauses. Instead of describing a concessive relation with real-world features, the concession is related to the conceptualizer's reasoning and propositional attitude towards the main clause event, which includes the mental scanning of a subjectively construed conceptualizer. Also, the difference between examples (39) and (41) highlights the

notion of epistemic control. That is, the finite concessive clause frequently refers to events that do not belong to the conceptualizer's conception of reality.⁵

This latter feature is also related to the possibility of inserting modals in the concessive clause. It is perfectly natural to use modals in concessive structures introduced by *although*, *even if* and *even though*. On the other hand, the use of modals in concessive structures that are introduced by prepositional expressions like *in spite of* or *despite* is more problematic. And as Langacker [2008] points out: "the absence of a modal indicates that the profiled process is accepted by the speaker as real (the result phase), and the presence of a modal, that it is not" [Langacker 2008: 162]. This being so, the finite concessive structures – and not the non-finite ones – are related to the notion of dominion, more exactly to the notion of epistemic control.

CONCLUSION

The present paper has shown that iconic principles such as linear ordering, formal complexity and formal distance may explain the conceptual differences between Portuguese concessive clauses introduced by *apesar de* and *embora*. The linear ordering of the APESAR DE CONSTRUCTION and the main clause correlates with that of a direct concessive relation. Moreover, the formal complexity and the greater distance to the main clause in the EMBORA CONSTRUCTION reflect conceptual complexity and distance. That is, the latter construction does not merely describe a concessive relation, but a more elaborated one that includes the conceptualizer's propositional attitude. Consequently, the APESAR DE CONSTRUCTION and the EMBORA CONSTRUCTION also display a relation between iconicity and subjectification. A higher degree of formal complexity and distance in the latter prototypically matches a higher degree of subjectification. Finally, the mood choice has been explained by the notion of dominion. The infinitive construction describes a direct concessive relation without focusing on this aspect. The subjunctive mood, on the other hand, signals that the concessive event is located outside the conceptualizer's dominion.

As a final point, the analysis offered in the present paper may not be exclusively related to the difference between finite and infinitive concessive structures in Portuguese. In fact, it is very likely that future investigations of concessive relations and different concessive structures in English may confirm the same conceptual patterns. That is, the concessive conjunctions followed by a finite clause are conceptually more elaborated than their infinitive counterpart. Although the preliminary analysis offered in the present paper needs to be further elaborated, it indicates that this may be the case.

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⁵ See also Sweetser [1990]. Sweetser [1990] makes a distinction between concessive clauses within the *epistemic*, the *speech-act* and the *content* domain.

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Chapter 76

SEEM*: EVIDENTIAL, EPISTEMIC, OR WHAT ELSE? A STUDY IN COGNITIVE SEMANTICS

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ABSTRACT

This paper, firmly anchored in the framework of Leonard Talmy's cognitive semantics, reconstructs a core semantics of the English verb *seem*, which is considered a central instantiation of the schematic system of cognitive state. This 'new' semantics is meant to overcome the indecisiveness of recent accounts how to categorize *seem* (and its equivalents in other European languages): either as evidential or as epistemic or as both, and concomitantly identifying the meaning of *seem* with the meaning of the various constructions of which it is a constituent. To this end, the semantics of *seem* is here associated with Talmy's concept of the comparison frame, which places alternative conceptualizations of a situation within a single frame. In the case of *seem*, these alternatives are either 'fictive' or 'factive', juxtaposed in an ambiguous figure-ground configuration, which may be disambiguated by what in Talmy's ongoing research on the attention system in language is called non-dedicated lexical triggers (like *really*, *just*, *merely*, *only*). Conceived of as an incentive for further investigations of how schematic systems are 'recruited' to integrate, the paper at the same time testifies to the explanatory power of Talmy's Overlapping Systems Model of Cognitive Organization.

Keywords: cognitive semantics, *seem*, evidentiality, epistemic modality, overlapping systems model of cognitive organization

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1. INTRODUCTION

At the beginning of this study on the semantics of *seem* I will refer to Shakespeare: The first occurrence of *seem* in Shakespeare's *Hamlet* has in fact become quite famous; critics argue that it addresses one of the main topics of that play, or even of Shakespearean drama in general—the opposition of appearance and reality. The passage in question relates to Hamlet's actual first entry—when the new king of Denmark, Claudius, asks Hamlet (after he has returned from Wittenberg to mourn the sudden death of his father): “How is it that the clouds still hang on you?”¹, and Hamlet replies: “Not so, my lord, I am too much in the sun.” Then, Queen Gertrude, Hamlet's mother, intervenes:

(1) *Queen*: Good Hamlet, cast thy nighted colour off And let thine eye look like a friend on Denmark. Do not for ever with thy vailed lids Seek for thy noble father in the dust. Thou knowst 'tis common all that live must die, Passing through nature to eternity.
Hamlet: Ay, madam, it is common. *Queen*: If it be Why seems it so particular with thee?
Hamlet: ‘Seems’, madam—nay it is, I know not ‘seems’.
 ‘Tis not alone my inky cloak, cold [good] mother, Nor customary suits of solemn black, Nor windy suspiration of forced breath, No, nor the fruitful river in the eye, Nor the dejected haviour of the visage, Together with all forms, moods, shapes of grief, That can denote me truly. These indeed ‘seem’, For they are actions that a man might play, But I have that within which passes show, These but the trappings and the suits of woe. (I.ii: 66-86)

This is, as the renowned critic Terry Eagleton has argued, above all a metalinguistic speech, where Hamlet “riddles and bamboozles his way out of being definitely known” (1986: 71). The evidence of outward ‘show’, the ‘as if’ of the action being played out, will mislead people's judgments on Hamlet's ‘true’ personality. Using a term that Leonard Talmy has introduced into cognitive linguistics, I will refer to how Hamlet *seems* to others as “fictive”, and how he really *is* as “factive” (Talmy 2000.1: 100). This tension between fictivity and factivity constitutes, I will suggest in this paper, the core semantics of *seem* in all its uses. This will no doubt be a controversial view because it contrasts with all current accounts of *seem* (and its equivalents in other European languages) in that it focuses on the lexical semantics of *seem*, rather than on the semantics of *seem*-constructions, and it rejects the proliferation of senses that comes as a corollary to the constructional approach.² Most of these studies also assume that *seem* is a, or rather the prototypical marker of (inferential) evidentiality, and that it is, at the same time, an instantiation of epistemic modality, expressing a less than definite commitment of the speaker/writer toward the factuality of a proposition. As in my preferred framework, Leonard Talmy's cognitive semantics, evidentiality and epistemic modality are conceived of as subcategories of a schematic system called cognitive state³, *seem* would thus be a marker of cognitive state. In this vein, the article is meant as a contribution to what can be known about the system of cognitive state. At the

¹ All quotes from *Hamlet* follow the Third Arden Edition [2006], which is based on the Second Quarto of the play.

² Cf. Aijmer (2009); Cornillie (2007a, b); De Haan (2007); Gisborne and Holmes (2007); Diewald and Smirnova (2010a, b).

³ Cf. Talmy (1988b: 200).

same time, however, it tries to unhinge its semantics from the categories of evidentiality and epistemic modality.

To this end, I have structured my paper in the following way: In strong support of George Lakoff's (1990: 146) dictum that there can be no arguments about conclusions if there is no agreement on premises, I will, in a first section, detail the concepts of cognitive semantics I need for my investigation. In siding with Talmy's conceptual semantics and his emphasis on the attentional primacy of the simplex morpheme over the construction⁴, my paper is also meant to be read as a contribution toward reinstating *conceptual* semantics as a major concern of cognitive semantics, perhaps as a partial antidote to the presently mushrooming usage-based cognitive linguistics accounts that yield tables, numbers, and more and more sophisticated statistics⁵. Since my study on the core semantics of *seem* is committed to cognitive semantics, my method is, in line with Talmy (2007c), primarily that of analytical thought, but not exclusively so: as my account will have a special focus on co-occurrence patterns, the data I adduce in my argumentation are all corpus-based; they are taken from Mark Davies' *Corpus of Contemporary English*⁶ and the *World Wide Web*.

In section two, I will direct my attention to the two categories of evidentiality and epistemics, setting them conceptually apart, as has become common practice in the expert literature, but likewise exploring the various ways they may become related. In that section I will also briefly delineate how evidentiality and epistemics have come (or not come) to be conceptualized in cognitive linguistics.

The central section three will present a case study of what I consider the core semantics of *seem*. In doing so, I will take account of the (alleged) semantic syncretism that is supposed to be a major characteristic of "epistentials" like *seem* and *appear* (see Faller 2002: 87). Scrutinizing typical co-occurrence patterns of *seem* with evidential and epistemic adverbs and modal verbs will cast some doubt not only on the assumption that *seem* is either epistemic or evidential, but also on the 'both-and' view. Instead, the paper will suggest a semantics for *seem* and *appear* that has recourse to such cognitive semantics notions as fictivity/factivity, figure/ground, and, in particular, the construct of the comparison frame⁷. Finally, in applying fragments from Talmy's ongoing research on attention, a selected class of adverbs will be re-analyzed as so-called (non-dedicated) triggers that make one of the alternative conceptualizations juxtaposed in a comparison frame more salient.

A concluding section will sum up my line of reasoning—a cognitive semantics approach that basically tries to implement Talmy's idea that different cognitive systems may be recruited⁸ to interact in constituting a cognitively motivated semantics of *seem* in *all* its constructional variants.

⁴ Cf. Talmy, forthcoming: "That is, the simplex morpheme, whether or not a construction grammar might hold it to exist in theory as a unit, may nevertheless have cognitive status as the prototype of a linguistic symbol and to be generally more salient than a construction [...]." I sincerely thank Len Talmy for giving me access to a substantial portion of his yet unpublished research on attention in language.

⁵ Cf. Glynn and Fischer (eds.) (2010).

⁶ Davies, Mark (2008-) *The Corpus of Contemporary American English: 425 million words, 1990-present*; available online at <http://corpus.byu.edu/coca/>.

⁷ The concept of the comparison frame has first been introduced in Talmy's (1996a) article on the windowing of attention (cf. Talmy 2000.1: 291).

⁸ Cf. Talmy (2011) for some ideas about schematic systems' potential interactions.

2. THE FRAMEWORK: COGNITIVE SEMANTICS

As stated before, my paper explicitly subscribes to Leonard Talmy's cognitive semantics, especially to his concept of the Overlapping Systems Model of Cognitive Organization, which is meant to describe how the mind works "at what is now often called higher levels of cognition" (Talmy 2006: 253). This model of cognition includes

- substantive systems, such as perception, motor organization, culture, and language,
- operational systems applying to the substantive systems—attention, memory, perspective.

These systems then function with respect to organized domains, like the spatial, the temporal, and the causal domains, which in turn may be conceived of as cognitive systems themselves. The result of this specific cognitive architecture is the Overlapping Systems Model of Cognitive Organization, which presumes that there may be differences or identities or degrees of overlap between these systems. Importantly, this specific architecture is a defining characteristic of Talmy's concept of cognitive linguistics, setting it apart from competing views within cognitive linguistics that summarily associate language with general cognition⁹.

Turning now to one of the major cognitive systems, language, it has been Talmy's long-standing research agenda to give a precise description of the concept structuring system of language as it is first and foremost expressed in the system of a language's closed class forms. This concept structuring system of language has a hierarchical structure—starting out from basic concepts via conceptual categories to the large-scale schematic systems that Talmy has so far reconstructed¹⁰. Such schematic systems consist of a selection of basic concepts in a particular arrangement of categories. To this date Talmy has recovered the following schematic systems in language:

- three so-called architectonic systems: configurational structure, perspective, and attention;
- the system of force dynamics, which addresses the forces exerted by and the causal interactions among entities marked out by the first three systems. Force dynamics is relevant for the present paper because it is the semantic category that "most uniquely characterizes the grammatical category of modals as a whole, both in their basic and in their epistemic usages" (Talmy 2000.1: 409);
- and, finally, Talmy has repeatedly mentioned that there is a large-scale fifth system, which he names the system of cognitive state. This system will occupy center stage in this paper;

Though it has not been scrutinized in such detail as the other four systems, Talmy has given us a sketch of what the conceptual substance of this system might be. Definitely it will have to comprise several subsystems. One of them is the epistemic system, "which covers characterizations of a sentient entity's states of knowledge" (Talmy 2006: 259-260); the

⁹ See, for instance, Langacker (2008: 8).

¹⁰ A spelled-out account of this hierarchical organization can be gained from Talmy (2005).

epistemic system is gradient in nature, and its values range from certainty to uncertainty. Other subsystems of the cognitive state system that Talmy refers to are the agency system (covering volition and intention), expectation, and the affect system in language.

While Talmy's focus has so far been mainly on the first four systems' structure and their patterns of operating, research might now proceed to investigate into these systems' interaction and integration.

3. EPISTEMICS: EVIDENTIALITY AND EPISTEMIC MODALITY

3.1. Evidentiality in Talmy's System of Cognitive State

If the epistemic system (as part of the system of cognitive state) has been analyzed at all in cognitive linguistics, it has been done so almost exclusively with regard to describing the epistemic senses of the modal verbs (mostly of English but also of other languages); here the hegemonic view has been to view these senses either as a mapping of force constellations (cf. Talmy 1988a) from the socio-physical domain into the epistemic domain (cf. Sweetser 1990), or in terms of the so-called evolutionary momentum of reality, which itself links up with the corresponding notion of subjectification (cf. Langacker 1991, 2008).¹¹ None of these—not necessarily mutually compatible—accounts provides any thorough treatment of evidentiality, though. Apart from Floyd (1999), a typologically motivated account of evidentiality which selectively applies notions from Langacker's cognitive grammar but is otherwise based on the then current typological studies¹², evidentiality has only been touched upon in an interview with Leonard Talmy published in the *Annual Review of Cognitive Linguistics* (cf. Talmy 2006). In that interview, Talmy (2006: 260) explicitly conceives of evidentiality as a subsystem of epistemics—along with “indicative-subjunctive type distinctions, factivity, forms of probability and possibility, and the like”. For Talmy, epistemics itself is, as I stated earlier, a major division within the system of cognitive state, covering sentient entities' states of knowledge. The evidential markers found in many languages of the world are, according to Talmy, to be located either at the certainty end of the gradient of epistemic certainty or, minimally, at the ‘considered probable’ end; certainty is thus correlated with ‘knowing’, and factuality and ‘considered probable’ with ‘inferring’ and likelihood of the stated proposition. In general, then, all evidential systems are, in Talmy's (2006) view, positively skewed toward the occurrence of the event or, in slightly different terms, toward the veridicality of the stated proposition. It is worth mentioning that Talmy uses the term proposition here—a by no means uncontested concept in cognitive linguistics (presumably because of its association to truth-conditional theories of meaning). Following Johnson (1987: 3), proposition might be considered a “pattern of experience or understanding, with sufficient internal structure to permit inferences.” Thus conceived, the term may find a legitimate place in cognitive semantics as well.

¹¹ All of this is meanwhile well known, and the details need therefore not be spelled out again; summary accounts may be found in Radden (1999); Günther Lampert and Martina Lampert (2000); De Mulder (2007); Mortelmans (2007).

¹² Cf. Bybee (1985); Chafe (1986); Anderson (1986); Willett (1988).

Note also that, in Talmy's conception, factivity (or veridicality) is *not* identical with factuality: while the term factuality displays connotations of truth, factivity is a genuinely cognitive concept (cf. Talmy 2000.1: 100). As to the difference between 'knowing' and 'inferring', they can be kept apart if one assumes that there are divergent 'bases' for concluding either the proposition's factuality or its likelihood (cf. Talmy 2006: 261). Thus, the speaker, in using some evidential strategy, has three bases for concluding the factuality of the proposition (which, recall, is correlated with 'knowing that'): she can witness the reported event, as in *John was out chopping wood—I saw him*. The speaker can perform the action in question herself, as when she herself states *The beads are now on the string*, knowing that she herself has been responsible for the stated result; or the factuality of the proposition derives from what is considered common knowledge, as in Talmy's example *Horses eat grass*. The 'considered-probable' value in the gradient of epistemic certainty is, by contrast, based on inference. Here, Talmy distinguishes several subtypes:

- The speaker has non-visually perceived the event; the standard example is *John must have been out chopping wood—I heard the whacks coming from the forest*. Worth mentioning is that Talmy in his 2006 interview considers epistemic *must* to be an evidential marker¹³.
- The speaker observes some piece of evidence, as in *John must be out chopping wood—the ax is missing from the house*. We note that the respective 'reading' of *must* as a special subtype of inferential evidentiality is here 'triggered' by elements of the context (the missing ax), serving as some kind of backward pointing attentional 'cue' that guides the hearer to 'select' the intended reading from potentially available competing ones. Alternatively, however, one might perceive this contextual cue to provide the necessary evidentiary 'strength' for the selection of *must* (as against, say, *may*).
- the speaker observes periodicity (a subtype which is only found in Talmy's sketch of evidentiality, not in the special literature on evidential subtypes): *John must be out chopping wood—it's 3 PM and he usually chops wood now*.¹⁴

These first three subtypes show that in such evidentially marked situations the evidence itself is not expressed in the marker but only in the context. Experts may recall Chafe (1986: 266) claiming that in cases of inferential evidentiality the evidence need not be specified. Such observations have prompted Günther and Martina Lampert (2010: 318) to submit the term contextual evidentiality to account for such evidential strategies as have been instantiated in Talmy's first three subtypes.

In the fourth type, where the evidence is based on hearsay, it is specified in the marker itself. Talmy's example *John is said to be chopping out wood* makes this sufficiently transparent. In this first subtype of hearsay, the mode of evidence is clear from *is said to* alone—the hearer or reader does not need any further contextual cues. And in a second hearsay subtype it is, as a complement, not the mode of evidence but the source that gets specified: in English, there is *according to*, as in, to modify Talmy's standard example a bit,

¹³ This view is likewise found in De Haan's recent re-readings of epistemic *must*—see De Haan (2009), and, earlier, Mortelmans (2000) on German *müssen* and *sollen*.

¹⁴ Surveys of the pertinent typologies are found in Squartini (2001) and Wiemer (2008).

*According to Fred, John is out chopping wood.*¹⁵ If it is supposed to be criterial for an evidential marker that the specific type of evidence be part of the core semantics of the marker, then these two reportative subtypes would be more prototypical evidentials than the markers of inferential evidentiality¹⁶.

While Talmy's remarks are, even in the sketchy form they are presented in the 2006 interview, among the most detailed statements about evidentiality in the cognitive linguistics literature, this is, of course, not the whole story about evidentiality¹⁷. What these notes have clearly revealed, though, is that the question 'where does evidentiality reside?' becomes indeed crucial for a description of the semantics of evidential markers.

That cognitive linguists have been relatively silent about the category of evidentiality may find its explanation in the fact that in English, their preferred object language, evidentiality is a lexical, not a grammatical category—which in a very influential strand of research has been deemed sufficient enough for not considering English a language in which evidentiality is a relevant category in the first place¹⁸. Research not only on grammaticalized but also on lexicalized evidentiality has indeed become vital in the last few years—mainly from a functionalist point of view¹⁹. Before I turn to my case study, it therefore appears necessary to briefly present what may be called the consensus view on evidentiality.

3.2. What the Experts Say: Notes on Evidentiality

Evidentiality is considered a conceptual category that has come to be described in wider and narrower senses²⁰. Most specialists would probably subscribe to Aikhenvald's (2003: 1) working definition: "Evidentiality proper is understood as stating the existence of a source of evidence for some information; that includes stating that there is some evidence, and also specifying what type of evidence there is." One may further distinguish between the source or the type of evidence and the mode how this information is obtained²¹. The source of information refers to the knowledge system by which the information is acquired; it can be external or internal to the speaker²². By contrast, the mode of information names the type of process leading to the acquisition of the information: it can be directly visual (or any other sensory mode like seeing, hearing, touching)²³, indirectly through inference, or it can be reports of various kinds (instances of mediated evidentiality²⁴). Moreover, we need to distinguish between a conception of evidentiality where it is just relevant that (or whether) the

¹⁵ On hearsay markers in European languages cf. now Wiemer (2010).

¹⁶ See Günther Lampert and Martina Lampert (2010) for details.

¹⁷ Cf. e.g., Cornillie (2007), which is, to date, the most detailed account of evidential verbs in a cognitive grammar framework—though it also has a strong grounding in functional grammar.

¹⁸ The most prominent advocate is Alexandra Aikhenvald; cf. Aikhenvald (2003, 2004, 2007). It must be added that her radical view on the grammar-lexicon divide is by no means shared by everybody in the community of evidentiality experts; see, e.g., Wiemer (2008, 2010a).

¹⁹ Cf., however, von Stechow and Gillies (2010) from the perspective of formal semantics.

²⁰ For a critical view on parameters used in definitions of evidentiality see Günther Lampert and Martina Lampert (2010).

²¹ The differentiation of source and mode derives from Squartini (2001), (2008).

²² This difference is now recast in terms of the notion of (inter-)subjectivity; cf. Cornillie (2007a, b) and, especially, Nuyts (2001).

²³ Cf. Günther Lampert, forthcoming.

²⁴ For the term see Plungian (2001).

stated proposition can be related to some piece of evidence, and a more specific one where the type or mode of evidence is supposed to be specified²⁵.

This difference may be re-conceptualized in terms of a distinction between ‘knowing that’ and ‘knowing how’. English examples of the which-type would be *this is visibly/tangibly/palpably/audibly false*, where the (sensory) mode of evidence is clearly specified in the adverbs. Other examples of the which-type instantiate mediated evidentiality, such as *it is said, s/he is said to*. For an expression to be considered an evidential marker of English, the that-type, however, seems to be sufficient. All the core stance adverbs mentioned in the literature to mark out evidentiality belong in this subcategory: *obviously, allegedly, apparently, evidently*. But, as Simon-Vandenberg and Aijmer (2007) reveal, none of these adverbs appears to have a clear preference for a specific type of evidence, and some of them are probably not evidential markers at all²⁶.

Yet, the conceptualization of evidentiality solely in terms of the that-type yields some problems. If this type should be sufficient for membership in the category, how would we have to interpret assertions like *He is tired*? They are, *qua* assertions, based on some evidence, or relate to some information source, even if it might be the (subjective) feelings or beliefs of the speaker: for any state of knowledge must come from somewhere. So, if categorical assertions are to be included as members of the category of evidentiality, it will ultimately become a gratuitous category. This need not ensue, however, because there is a difference between categorical assertions and their associated propositions and evidentially marked propositions. Distinguishing between these two types would, for the first time in my survey, invoke the attention system of language. While it may indeed be so that in our world all categorical assertions need some evidence as their knowledge base, this is, at least in English, not made linguistically overt; or, to phrase it in Talmy’s terms: in categorical assertions evidentiality is not attentionally windowed but remains in the background of attention. In Talmy’s new factor model of attention²⁷, the notion of windows of attention will be recast in more general terms as one basic principle of attention: it is the attentional principle of presence that makes the difference here.

Also, it could be argued that any evidentially marked proposition invariably expresses only a weakened commitment to the veridicality of the stated proposition; in other words, the marked proposition would always have to be ‘less’ committed to the factuality of the stated proposition than an unmarked categorical assertion. If this were a valid assumption, it would follow that when you say *she is obviously tired* it may in fact not be so obvious; or, there may be no or at least no sufficient or shared evidence available to communicate the information in the form of a categorical assertion. Reformulated in terms of epistemic certainty, one might argue that you only say you are certain when you are not—in the same vein as you only give reasons when an alternative is deemed necessary.²⁸

²⁵ Compare Aikhenvald’s (2003) definition cited above.

²⁶ *Clearly*, for instance; see Wiemer and Stathi (2010: 279).

²⁷ See Talmy (2007a).

²⁸ See Talmy (2000.1: 291-292).

3.3. Epistemic Modality

If it may still be premature to present a consensus definition of evidentiality, specialists more readily seem to agree on what epistemic modality is supposed to be about: it is instantiated by expressions whose semantics refers to such notions as ‘degree of certainty’ or ‘speaker’s commitment to the truth of the proposition’²⁹. Of course, the notions employed in the definitions reveal (as has already been shown in Lampert and Lampert 2000) that the research tradition in the area of epistemic modality has always been strongly rooted in modal logic. This becomes apparent even in the following quote from Nuyts (2001: 21), perhaps the most detailed functional-cognitive account of epistemic modality:

“Epistemic modality is defined [...] as (the linguistic expression of) an evaluation of the chances that a certain hypothetical state of affairs under consideration (or some aspect of it) will occur, is occurring, or has occurred in a possible world which serves as the universe of interpretation for the evaluation process, and which, in the default case, is the real world (or rather, the evaluator’s interpretation of it [...]).”

The most influential cognitive linguistics conception of epistemic modality has conceived of it as a metaphorical projection of forces from the socio-physical into the epistemic realm (cf. Sweetser 1990). In definitions of epistemic modality in terms of a mapping of forces, the notion of evidence becomes part of the definition, thus making obvious the relatedness of the two concepts, but at the same time also the problems involved; in the epistemic domain, the only imaginable ‘force’ can be the ‘force of evidence’ (in the form of premises), which would, for instance in the case of epistemic *must*, compel the speaker to conclude that *p*. But the force of evidence is also present in the other epistemic modals, such as *may* and *might*—the only difference between them perhaps being that the conclusion is stronger or weaker. It can likewise be shown that the schematic structure of the source domain is not invariantly mapped onto the target domain; there are above all differences in the attention patterns involved in the mapping.³⁰ For the objective of the present article we may disregard the categorization problems involved in the potential mapping of forces from the non-epistemic to the epistemic domain and move on to the potential distinction or conflation of the two categories of evidentiality and epistemic modality.

A very straightforward distinction between evidentiality and epistemic modality has been suggested by De Haan³¹—it has meanwhile acquired a slogan-like status among the specialists: While evidentiality is seen to assert the evidence (recall: this only requires the that-version of evidentiality, not necessarily the which-version), epistemic modality is supposed to evaluate the evidence (in terms of different degrees of epistemic certainty). While evidentiality is, as has been shown, generally structured as a collection of discrete types, epistemic modality is usually considered gradable in terms of degrees of certainty. On the

²⁹ Though the term ‘commitment’ has turned out to be problematic as well; see, e.g., Nuyts’ distinction between performative and descriptive uses of modal expressions: “A performative expression marks an attitude [i.e., an evaluation of a proposition, G. Lampert] to which the speaker is fully committed at the moment of speech. In a descriptive use, the speaker is not committed, but is only reporting on an attitude regarding some state of affairs held by someone else, or by the speaker at some point in time other than the moment of speech, or as a hypothetical possibility.” (Nuyts 2006: 15).

³⁰ More details on problematic issues have already been discussed in Günther Lampert and Martina Lampert (2000: 232–233).

³¹ See, e.g., De Haan (2005: 380).

other hand, there is such a notion like ‘evidentiary strength’, which also appears to be gradient: something can indeed be more or less obvious/apparent/evident—but still, it remains an open question whether this entails a stronger or weaker commitment to the factuality of the stated proposition. Occasionally, attempts have been made to correlate evidentiary strength with the type of evidence: direct evidence would then be rated higher, and mediated evidence lower. Yet, the correlation does not hold across the board; it is, as Nuyts (2005, 2006) observes, in fact cancellable: if the reported evidence comes from an expert, it will of course be rated higher than a potentially fallible piece of sensory direct evidence obtained by the speaker. Given the fact that evidentiality and epistemic modality are closely related and thus not easily disentangled, it comes as no surprise that the relatedness of the two categories has been described in various mutually exclusive ways³²:

- There is the view, prevalent now in the specialist literature on evidentiality, that evidentiality and epistemic modality must be seen as conceptually disjoined.
- One strong minority view³³ holds that evidentiality should be a subcategory of epistemic modality (or epistemicity).
- Then there is a second minority view that includes epistemic modality in the category of evidentiality (see Papafragou 2000 and Infantidou 2001); so here evidentiality would be the superordinate, and epistemic modality the subordinate category.
- Next, the idea of a conceptual overlap has likewise been entertained—for instance in the semantic map approach by Van der Auwera and Plungian (1998: 85-86).
- An interesting suggestion that goes beyond these set-theoretically oriented and discrete classifications has recently been made in Wiemer (2008: 9); he sees evidentiality and epistemic modality tied up in a mutual implicational relationship that can be characterized in terms of a figure-ground contrast. Depending on the environment, the situation, and, moreover, on diachronic tendencies, one or the other ‘meaning’ can move into the foreground, while the other will then recede into the background (but never totally disappear, it seems); *seem* may thus once become, for instance, a hearsay marker, and, next time, a marker of epistemic (un-)certainty.

Importantly, though, in many accounts, no principled distinction is being made between the conceptual and the formal levels of linguistic signs; they are (often tacitly) conflated.

4. A CASE STUDY ON *SEEM*

4.1. Syncretism in the Expression Domain: *Seem* as an Epistential

Siding with the majority view this time, the position of the present article is that evidentiality and epistemic modality should, in the conceptual domain, be kept apart, but that a large extent of syncretism is to be expected in the expression domain. This insight has motivated the introduction of a new term: Faller (2002: 87) for the first time refers to verbs

³² For more detailed accounts cf. Cornillie (2007); Wiemer (2008); Boye (2011).

³³ This is actually the initial view, dating from the first symposium on evidentiality; see Chafe and Nichols (eds.) (1986).

that characteristically display such syncretism as epistentials: “Let us call an element that expresses evidentiality and epistemic modality simultaneously provisionally epistential.”

Perhaps the typical epistential in English is the key item of the present article, the verb *seem*, although it must be stated that the evidential and, concomitantly, the epistemic meanings of *seem* are generally taken as given, but hardly ever argued out. The clearest statement to the effect that an equivalent of *seem*, the German verb *scheinen*, is both an evidential and an epistemic marker can probably be found in Diewald and Smirnova (2010a: 2-3); referring to a potential utterance *Sie scheint ihren Schirm im Büro gelassen zu haben* ‘She seems to have left her umbrella in the office’, and after characterizing *scheinen zu* beforehand as a “typical evidential expression” (2), the two authors state:

“In this example the evidential construction refers to the fact that the speaker derives his/her conclusion from some (visual) evidence she/he has for making the claim (namely ‘She has left her umbrella in the office’). The undeniable fact that this sentence also refers to the uncertainty of the speaker, implying that she/he does not have secure knowledge, is due to a particular trait of German evidentials, namely the fact that German evidentials very often have epistemic modality meanings as a concomitant feature.” (2-3)

Even if the word *fact* is used three times in the quote, it cannot obscure the ‘fact’ that what we read here are just claims not backed up by any supportive evidence. Do we really know from the utterance quoted that, as Diewald and Smirnova write, the speaker draws his/her evidence from some “visual evidence”? Do we really know that the “uncertainty of the speaker” is an “undeniable fact”? And, finally, how can we know the “fact” that German evidentials have epistemic modality meanings as “concomitant features” (of what type)?

If this was just an isolated interpretation, or a kind of shorthand notation, it could easily be glossed over, but, unfortunately, it is quite typical of old and new research on *seem* (and, no less, on *seem*-constructions). In the case of Diewald, she has in fact been propagating for more than a decade now (beginning with Diewald 2000, continuing in 2001 and 2004) that German *scheinen* (and, by virtue of the translations given, its English counterpart *seem*) encodes an uncertain factivity value *and* an unspecific evidential component³⁴. What has changed in her account over time, however, is a matter of semantic ‘primacy’; while in her earlier accounts, evidentiality and epistemic modality were seen on a par, or even the epistemic meaning to be more salient, Diewald and Smirnova (2010a, b) now claim that the evidential meaning of *scheinen* is primary, and that any epistemic modal value must be treated as a concomitant, or as an implicature³⁵.

While older studies like Bäcklund (1982) turn out to have been more interested in the lexical semantics of *seem* (to distinguish it from a more ‘factual’ *appear*), the most recent accounts do not have the lexical meaning of *seem* (or its equivalents in other languages) in their focus, but rather unanimously concentrate on the various *seem*-constructions and tend to read or project their meanings into the lexical meaning.³⁶ In the literature on English *seem*-constructions, the following constructional variants are commonly distinguished:

³⁴ See Diewald (2001: 91).

³⁵ Cf. Diewald and Smirnova (2010a: 93) and (2010b: 126).

³⁶ See, for English, Gisborne and Holmes (2007); De Haan (2007); and Aijmer (2009); for Spanish Cornillie (2007a, b); and for German Diewald and Smirnova (2010a, b).

(a) *seem* + infinitival predicative complement (the subject-to-subject raising construction): *He seems to be tired*

This construction is generally considered to be the most grammaticized type of seem-constructions³⁷, especially in combination with other verbs than *to be*.

(b) with a clausal subject: *that he is tired seems to be too obvious*

In my view, this is just a positional variant that affects the attentional values of its components, but does not yield any new semantics.

(c) *it seems* + *that*-complement clause: *It seems that he is tired*

(d) as (c) + subjective 'experiencer': *It seems to me that he is tired*

Of course, this is a more 'subjective' variant of (c), because it makes the experiencer overt.

(e) comparison clause: *It seems as if/as though he is tired*

(f) *seems* + adjectival predicative complement: *He seems tired*

(g) as (f) + subjective experiencer: *To me, he seems tired*

(h) as a parenthetical: *He is tired, it seems / It seems, he is tired*

To these, yet another construction might be added that, if one can trust *OED* evidence, in fact yields the first recorded truly evidential sense of *to appear*. It is found in Shakespeare's *The Merry Wives of Windsor* (III.i.72), and it mentions the perceptual source of information in the immediate linguistic environment:

(2) *Page*. Hee's the man should fight with him.
Shal. It appears so by his weapons.

The construction can be used with *seem* as well, and it is indeed attested today in Web examples in the form of *it seems so by/according to*—though it is not found in *COCA*:

(3) *Maybe it's because I'm American and we produce most pop music, or at least it seems so by what's played on the radio here.*

(4) *Maybe shoving is something taught in police school in Arizona? It seems so by the looks of this video, where a 15-year-old girl is slammed to the ground by Phoenix Police Officer Patrick Larrison.*

(5) *Crow pose the new cure for midlife crisis? [a yoga pose] It seems so, according to the New York Times. This week's Sunday Magazine purports that women are now responding differently to midlife crises than they first did with the rise of feminism in the '70s.*

What makes this construction noteworthy is the observation that, unlike in the preceding ones, the purported evidence is mentioned next to *seem*. But even here, the problem of what *seem* does contribute to the meaning of the utterance is not yet solved.³⁸

It turns out to be the case that in the construction-based approach there is an obvious predilection for holistic over distributed semantics conceptions (cf. Sinha and Kuteva 1995): elements of context are thus regularly projected into the semantics of a lexical item—a

³⁷ This unites the studies mentioned in the preceding footnote.

³⁸ From a constructional point of view, another very interesting construction might be the *can't seem to*-construction; cf. Jacobson (2006) for a recent analysis (which has, however, its problems also).

strategy that, in my view, is the main reason why the number of the stipulated senses then tends to explode.

The problem of how to control the number of senses a lexical item is assumed to have has in fact been a long-standing one in cognitive linguistics descriptions of the semantics of lexical items (actually since the first over-studies by Lakoff and Brugman appeared in the late 1980s), and it has since then been the source of many debates. Even if I do not intend to engage in the matter in any detail, I need to state that it still is an unresolved issue. This can be gathered, for instance, from Gregory L. Murphy's (2011: 393-395) review of Evans (2009), where he points out the dilemma with regard to the semantics of the verb *fly*.

(6) *The pilot is flying the plane.* [operation of entity capable of aerodynamic motion]

(7) *The child is flying the kite.* [control of lightweight entity]

To be able to follow his line of argument, I will quote Murphy in full:

“Why does E assume that the meaning differences are associated with the word *flying*? Could it not be that this verb is contributing the same meaning but its arguments are modifying the meaning? If there is a semantic difference between (6) and (7), it would seem to be the difference between planes and kites, not in flying. Even if there is a different semantic contribution from *flying* in the two cases, why does this amount to a difference in senses? The book merely stipulates that these are two different senses, rather than explaining or arguing for this difference. E's assumption seems to be that any difference that he can identify in such sentences means that there is a difference in sentence meaning and therefore lexical meaning. The well-known problem with this approach is that it results in each word having far more senses than anyone wants or believes. Indeed, every word will become massively polysemous by this account. For example, why not posit that words like *neighbor* or *boss* have two senses, one for each gender?

After all, (8) only makes sense with a male and (9) with a female.

(8) *My neighbor married his third wife.*

(9) *My boss is pregnant with triplets.*

With little effort, we could produce examples that make sense only with tall neighbors or neighbors who do not speak English as their native language or rude neighbors, and so on. Instead of positing all of these forms of polysemy, it is usual to say that the word is GENERAL with respect to gender, height, rudeness, and so on (...). That is, these variables are omitted from the lexical entry, and *neighbor* can be used irrespective of their values. Why not say that *flying* is general with respect to the type of object being flown? Would that account for all the data? This possibility is not addressed.”

My own position of the matter has decisively been influenced by Talmy's views, especially by his conviction that the meaning of morphemes and of constructions should be kept apart (if only for heuristic purposes), and that even when the generalized semantics of constructions is at issue, the core meaning of morphemes must not be overlooked (cf. Talmy, forthcoming).

What could be yet another (unexpected) counter-argument against the construction-based view of *seem* and its ‘rich’ semantics is the finding that, at least for English *seem*, we cannot reconstruct any grammaticalization paths or any order of occurrence of the different constructions.³⁹ All the relevant *seem*-constructions are available almost simultaneously in the 14th century (if the *OED* attestations can serve as trustworthy evidence; see also Gisborne and Holmes 2007).⁴⁰

In contradistinction to what the hegemonic constructional accounts claim, I hold that none of the constructions mentioned above will yield any significant bias toward one specific evidential reading. If evidence is given for the stated proposition modified by *seem* at all—and this is very often not the case—it is usually found in the wider context, not in the immediate environment of the *seem*-construction itself. And, likewise, the degree of certainty that may be associated with any proposition that is modified by *seem* is entirely context-dependent and cannot be predicted from the construction type alone. Although a close inspection of a large random (contextualized) sample of the 236,618 word forms of the *seem* lemma in the most recent version of *COCA* (as of August 29, 2011) cannot be conclusive evidence—because in fact all occurrences would have to be checked—the six-line context provided in *COCA* is rarely sufficient to trace the mode or the source of evidence.

So, even under the auspices of the construction approach, the fundamental categorization dilemma (also voiced in Aijmer 2009) cannot be explained away: Is *seem* evidential or epistemic or both? And if this problem lingers on so tenaciously, why not look for an alternative and dare to ask the question: Maybe it is neither? Or, to reformulate this question into some research agenda, perhaps another framework can be found in which it may become possible to arrive at a more satisfying description of the meaning of *seem*.

To back up my strategy of finding a way out of the categorization deadlock, I will first present some findings about actual co-occurrence patterns of *seem* that can shed light on the intricate relationship between evidentiality and epistemic modality in the semantics of *seem*.

4.2. Co-Occurrence Patterns of *Seem*

First of all, one has to note that *seem* (in different construction types) can co-occur with prototypical evidential adverbs, as in the following examples (excerpted from *COCA*):

- (10) *The monthly fees sound low, and for millions of users they evidently seem so ...*
- (11) *and their mother, who obviously seems to be siding with one sister ...*
- (12) *Even now, Baghdad apparently seems quite disappointed ...*
- (13) *As an overzealous Los Angeles police officer, Samuel L. Jackson clearly seems ready to head down such a clichéd, schlocky road ...*

If the primary meaning of *seem* is evidential, as Diewald and Smirnova (2010a, b) claim it is, we would, in examples (10) – (13) at least, have evidentiality marked twice. If this were

³⁹ Cf. De Haan (2007), and *pace* Gisborne and Holmes (2007).

⁴⁰ Though this article is not concerned with *appear*, it should be noted that the situation is different there. In the case of *appear* we observe clear instances of semantic bleaching, with subjects being taken from increasingly abstract ontological classes; clausal subjects apparently allow evidential meanings, and subject-to-subject raising is seen to follow this development.

so, what would then be the difference in function between the evidential adverb and *seem*? It cannot be that the adverb contributes information about the mode or the source since both expressions are quite unspecific in these respects: they just state that there is some evidence. One could possibly argue that one expression makes the statement more intersubjectively valid—but, again: which of the two would it be?

An obvious way out might be to consider *seem* not an evidential but rather an epistemic marker—but how should we now cope with the fact that *seem* can also co-occur with central adverbial markers of epistemic certainty?

(14) *And would you actually repeat words like these—even if you want them to be true? It probably all seems a little silly or superstitious, to say nothing of embarrassing.*

(15) *They sure seem to be able to do some things right ...*

(16) *Joe Biden certainly seems to be enjoying himself ...*

(17) *That doesn't necessarily seem to be the case ...*

(18) *Mary truly seems to enjoy the place ...*

In case *seem* should primarily associate an epistemic value such as 'considered probable', we would run into yet another problem, namely that the epistemic value of the adverbial marker would then just reinforce the epistemic value of *seem*. Only if *seem* were an evidential marker (and had no epistemic values attached to it), the adverbial epistemic marker could be analyzed as evaluating the evidence that *seem* only states it exists. Then, however, we would be faced with the problem discussed just a while ago, and our argumentation would have come full circle: sometimes *seem* would be an evidential marker, sometimes an epistemic marker—but we cannot know when unless there is something that triggers its more salient reading (this is what Wiemer (2008) would seem to suggest).

To round off this account, it needs to be mentioned that *seem* can also co-occur with markers of epistemic possibility (or uncertainty):

(19) *Archaeology perhaps seems 'old' because we associate early civilizations ...*

(20) *Which is why maybe he seems so composed ...*

And, to conclude, we likewise observe a combination of *seem* with modal verbs of certainty and possibility:

(21) *It must seem pretty comical to hear me coming down on the side of stricter editing*

(22) *As strange as it may seem OR Strange as it may seem*

Again, we would have to deal with the problem that, this time, an epistemic value of (un-)certainty would be reinforced by yet another marker of (un-)certainty. So, all one can state is that, for the time being at least, the problem of assigning a meaning to *seem* that would involve evidentiality and/or epistemics has not been solved.

To avoid a renewed confrontation with these problems I will therefore suggest a way out by accessing semantic constructs from Talmy's cognitive semantics.

4.3. A ‘New’ Semantics for *Seem*: Fictivity/Factivity, Figure/Ground, and the Comparison Frame

While so far the pertinent domains of meaning evoked by *seem* have been modes and sources of evidence, degrees of certainty, and (inter-)subjectivity, I will now focus on the opposition between factivity/veridicality vs. fictivity/non-veridicality that I have touched upon in the introduction, and I will claim that it is crucial for an adequate description of the meaning of *all seem*-constructions.

The factivity vs. fictivity dichotomy was first treated in Talmy’s fictive motion article from 1996⁴¹ where the two concepts are seen to associate a major cognitive pattern involving a discrepancy within the cognition of a single individual of two different cognitive representations of the same entity—for instance a situation or an event. One of the two representations is assessed as more veridical than the other; there need not be a conflict or a clash between the two representations, because they may be seen as alternative perspectives. Of the two discrepant representations, the one assessed as more veridical is called *factive*, the one assessed as less veridical is referred to as *fictive*. It must be emphasized that the two terms are meant to represent cognitive assessments: *factive* (not: *factual*!) is not to suggest that the representation is in any sense objectively true or real; *fictive* refers to the imaginal capacity of cognition—it does not signal ‘objectively unreal’ or ‘not true’.

When, in a next step, the notions of factivity vs. fictivity are linked up with another cognitive construct (introduced by Talmy in his 1996 windowing article⁴²), the comparison frame, a more adequate description of what *seem* might mean will ensue. Some explanatory remarks are in order: the comparison frame is considered a subtype of one of the basic event-frames reconstructed in that article, the so-called interrelationship event-frame:

“a conceptual complex that contains or is comprised of parts not autonomous in themselves but intrinsically relative with respect to each other, where the presence of one such part necessarily entails the presence of the other parts. A conceptual complex of this sort is here called an interrelationship complex and can constitute a further type of event-frame, the interrelationship event-frame. Such an internally self-entailing complex could logically be considered a single-unit entity, but our conceptual and attentional systems are so organized as to be able to conceptualize the whole as if portioned out into quasi-independent elements to which heightened attention can be differentially directed.” (Talmy 2000.1: 288)

One subtype of this interrelationship event-frame is the factuality event-frame, one subtype of which is the comparison frame. Here the placement of the two alternative or discrepant conceptualizations can be accomplished within a single frame of consideration,

“so that although main attention is on only one of the alternatives, the other alternative is still present in a backgrounded way to act as foil for comparison. An event frame that in this way evokes larger-frame juxtapositions of alternative conceptualizations can be further said to constitute a comparison frame.” (Talmy 2000.1: 291)

⁴¹ The most recent version is Talmy (2000.1); see especially 99-100.

⁴² Cf. the latest version in Talmy (2000.1); see especially 288-292.

If we apply the notion of the comparison frame to the fictivity system and link this up with the attention system, we will encounter an example of how language may recruit several cognitive systems to integrate (see Talmy 2011).

To illustrate how the comparison frame can be implemented, I will briefly refer to Talmy's analysis of a syntactically negative clause like, say, *I didn't go to John's party last night*. This clause, Talmy emphasizes, "overtly names something that did not take place but tends to evoke consideration of the corresponding unrealized positive event—and in this respect it differs from a simple positive clause, which tends not to evoke consideration of its negative counterpart." (Talmy 2000.1: 291) The second of Talmy's examples refers to a syntactically positive main clause when it is combined with a *because*-clause (e.g., to cite Talmy: *I went to the movies last night because they were playing my favorite film*). In this case the complex sentence "tends to evoke its unrealized counterpart (a failure to go to the movies) since the inclusion of a reason or cause that has given rise to some realized phenomenon suggests that, in the absence of that cause, the phenomenon would not have occurred." (Talmy 2000.1: 291) And, to end up with yet another example, which concerns epistemic *may* and is thus semantically close to the *seem*-case that I will discuss immediately: *Sue may have gone to John's party last night*. Following Talmy, *may* "includes a constituent placing the referent event at some point along a scale of certainty or realizedness" (Talmy 2000.1: 292); it yields the existence of such a scale and "thereby evokes the consideration of points nearer the opposite pole of the scale" (Talmy 2000.1: 292).

Equipped with the concepts of the comparison frame and the opposition of fictivity vs. factivity, I can now construct the core meaning of *seem* as oscillating between factivity and fictivity within one single comparison frame, where main attention is on one of the alternatives, say, fictivity, but where the alternative, factivity, is co-entailed and thus still present in a backgrounded way, "to act as foil for comparison", to use Talmy's wording.

Constructed in this vein, the core meaning of *seem*, which I claim holds for all *seem*-constructions, draws upon yet another well-known fundamental perceptual opposition, that of figure and ground. Figure/ground organization was discovered by the Danish psychologist Edgar Rubin in 1921⁴³ and covers an aspect of region segmentation in visual displays where one partitioned out segment is subjectively perceived as thing-like, closer to the observer, bounded by contours (in stationary displays), or as moving (in moving displays), while the other is perceived as not thing-like, farther from the observer, extending behind the contour, and stationary. The first type of segment is called the *figure*, the backgrounded one the *ground*. Sometimes, however, such visual displays tend to become highly ambiguous (the most famous example would be the Rubin vase); so other (bottom-up or top-down) factors will be needed to determine what is figure and what is ground. Applying this vision-related constellation to the construct of the comparison frame in language, which is here supposed to account for the semantics of *seem*, we may observe that the segmentation of the semantic space into a fictive and a factive 'segment' tends to be likewise ambiguous. The principles of what may eventually determine figure detection in vision are, according to Palmer (1999: 282) *ceteris paribus* rules—"rules in which a given factor has a stated effect if all other factors are eliminated or neutralized". Yet the problem immediately emerges that the eight factors mentioned by Palmer (surroundedness, size, orientation, contrast, symmetry,

⁴³ The following is mainly based on Palmer (1999: 280-285).

convexity, parallelism) usually do not occur in isolation; hence, it seems impossible to predict the perceptual outcome if several conflicting factors are at work in a display.

Pushing the analogy of figure/ground organization in vision and in language a bit further, one would then have to ask what could correspond to Palmer's vision-related factors; that is, which factors might be responsible for favoring one reading in the present systemically ambiguous factive/fictive configuration (the *seem*-semantics). If in vision such factors relate to the ecology of the configuration in question (or maybe to deliberate decisions of the observer)—in language they may, accordingly, be found in the ecology, that is, in the linguistic or non-linguistic environment of the ambiguous item in question.

4.4. Tipping the Balance: Non-Dedicated Lexical Triggering

While *seem* has been conceived of as generally evoking a comparison frame with a juxtaposed fictivity/factivity configuration, linguistic items in the immediate environment (at least in English) can select one of the two readings to make it the figure, and the alternative the ground.

To detail how this might be accomplished, I need to describe some co-occurrence patterns again. In the immediate linguistic environment of *seem* we frequently find focusing adverbs whose function it may be to draw hearers'/readers' attention to what will be perceived as the figure in a textual constellation that can be viewed as corresponding to a visual display.

To trigger⁴⁴ the factivity reading, adverbs such as *really*, *just* or *clearly* may be selected:

(23) *It really seems like he is more conservative ...*

(24) *It just seems like the whole world is spinning out of control ...*

(25) *the mood of the world at large clearly seems to be all but unanimous that Iraq was the aggressor ...*

(26) *Here, indeed, we are up against what truly seems like the obsolescence of serious art in general ...*

The juxtaposed alternative fictive reading of *seem* can be triggered by adverbs such as *only* or *merely* (note that the selection is accompanied by a special stress pattern, with *seem* becoming attentionally more salient because of heightened stress):

(27) *The image only 'seemed to burn brighter ...*

(28) *It merely 'seems unlikely ...*

Reverting to the question that stood at the beginning of section 4, "Where does evidentiality reside?", I now conclude that *seem*'s lexical semantics does not readily license the verb as an evidential marker. Both the relevant mode of evidence and its associated degree of (un-)certainty are entirely matters of context, and never part of the core meaning of *seem*. This assumption may be plausible since, as has been shown, linguistic items are available to

⁴⁴ To interpret these adverbs as a form of (non-dedicated) triggers to select out a targeted reading of a polysemous lexical item has again been inspired by Leonard Talmy's ongoing work on the attention system in language.

trigger, if necessary, one of the two alternative readings of factive or fictive *seem*, making the selected reading contextually more salient than its competitor, which is, however, still attentionally present, though in a backgrounded way.

4.5. Two Extended Examples

To contextualize my attempt at capturing the semantics of *seem*, I will, next, analyze two extended examples in somewhat more detail. Here is the first one:

(29) *Archaeology perhaps **seems** “old” because we associate it with early civilizations (which we need not do), but in fact rigorous archaeology is very modern indeed.*

In this example, the *because*-clause provides the necessary contextual evidence for a potential claim ‘archaeology is old’. This categorical assertion is, however, immediately mitigated by the speaker’s comment that is inserted within the parentheses. Though that comment is, according to the still dominant view of parenthetical constructions (for convincing counter-arguments see, however, Martina Lampert, forthcoming), supposed to be informationally less salient than its host, it nevertheless triggers the fictive reading of *seem*. This fictive reading of *seem* is, in a next step, additionally motivated by the inclusion of *perhaps* (with its associated low degree of epistemic certainty). And, finally, the added *but*-clause contains yet more support for the intended fictivity reading, namely by virtue of the selected syntactic form, a categorical assertion, and the booster *in fact*. Thus, all in all, we find four triggers that are used here to disclose the stated proposition ‘archaeology is old’ as a dubious assumption, and the potential reason for this assumption adduced in the *because*-clause as a pseudo-argument. Yet despite all the triggering devices he adduces, the author still did not wish to make a negated statement of the form *Archaeology is not old, even if or despite ...* Instead, she or he preferred to choose a *seem*-construction—maybe because, I would suggest, using *seem* always provides interlocutors with the (strategic) option to cancel the salient reading by later adducing a statement of the sort *I only said ‘seemed’, but didn’t mean it is*.

If in the first example we could observe various triggers that make the fictivity reading of *seem* more salient (i.e., figural), in the second example it is the alternative factivity reading that is moved into the foreground of readers’ attention.

(30) *And with this story of a psycho-cop who tries to run off his new next-door neighbors, you wish he’d have just given into the B-movie instincts of the material, and not tried to make “Lakeview Terrace” about Something Important. As an overzealous Los Angeles police officer, Samuel L. Jackson clearly **seems** ready to head down such a cliched, schlocky road. He is, after all, the one who triumphed over all those (expletive) snakes on that (expletive) plane.*

In this example, we find the ‘evidence’ for the stated proposition in the immediate linguistic environment. The intended ‘factive’ reading of *seems* is here triggered by *clearly*, which adds some extra epistemic strength to the veridicality of the proposition affected by *seems*. But here, too, the writer refrains from uttering an unmodified ... *clearly is ready*.

So it has turned out that, like in vision, “attention cannot be completely determined by figure/ground organization” (Palmer 1999: 284). If it were so, the ground could not be attended to—but we know that it can. If this insight is transferred to what may happen in language use, top-down decisions of the hearer/reader may always override the triggered reading; and so the following quote from Palmer (1999: 284) can likewise be read as an apt summary of the corresponding situation in language: “It thus seems clear that attention can be flexibly allocated to either figure or ground, depending on the goals and intentions of the observer, but that there is a strong bias to attend to figures.”

As to *seem* and its core semantics, it is systemically ambiguous between a fictive and a factive assessment of the situation (this is the function of the juxtaposition within the comparison frame); this ambiguity can be overcome by (optional) non-dedicated triggers, but the ultimate reading of *seem* depends on hearers’/readers’ attentional top-down decisions.

5. SUMMING-UP: A LINE OF REASONING

After sorting out what I take to be the core meaning of *seem*, I can now briefly sum up my line of reasoning and draw some conclusions. *Seem* is, I propose, neither an unequivocal lexical marker of evidentiality (not even in the sense *that* there is some evidence, let alone in the sense that it specifies the mode or source of evidence), nor is it an epistemic marker that would evaluate the assertion in terms of a fixed degree of epistemic certainty. Rather, by adopting the cognitive semantics framework, we can understand *seem* as evoking a factivity/fictivity comparison frame: a juxtaposition of alternative conceptualizations within a single frame with an ambiguous figure-ground distribution. This is *seem*’s (highly schematic) core semantics, which may get augmented by optional non-dedicated lexical triggers (like epistemic or evidential adverbs or other modal expressions) that are conducive to biasing the interpretation either way (though not completely determining it). By conceptualizing the meaning of *seem* in this way, the notorious problem of the double marking of evidentiality or epistemic modality dissolves.

And, theory-internally, my study may be read as a plea for more investigations of how schematic systems can be recruited to integrate. The systems that I have addressed in the present attempt at capturing the semantics of *seem* as a member category of the schematic system of cognitive state are the fictivity system, (pre-attentive) figure/ground organization, and the attention system (with both its bottom-up and top-down components). These systems’ interaction provides this sub-system of cognitive state with a conceptual structure of which *seem*, and *appear*, for that matter, become important instantiations: *Seem*, as has been suggested already in my ‘Shakespearean’ introduction, is to be located in a semantic space where its two natural counterparts turn out to be *is* and *is not*—it thus becomes a further member of what Talmy names the factivity subsystem of cognitive state.

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Chapter 77

MANNER OF MOTION: A PRIVILEGED DIMENSION OF GERMAN EXPRESSIONS

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ABSTRACT

Within Talmy's (2000) and Slobin's (1996) typological framework, German belongs to satellite-framed languages, which generally express the path of motion in satellites and the manner of motion in the main verb. For Talmy (2000: 281), the expression of the path is the most basic information, it constitutes the core component; the manner expression is a subsidiary dimension.

Many studies have focussed on the typological differences between different languages based on the path expression and have paid less attention to the expression of the manner dimension.

Our study aims at taking a closer look at this neglected dimension of the manner of motion as it is realized in German. It will show that German is characterized by a manner salience which is realized at different levels of lexicalization and which is not restricted to motion and location verbs as the core of the lexicalization pattern.

The manner of motion is typically also expressed in complex prepositional groups, especially with the preposition *bis* ('up to/till/until'), or at the level of complex local adverbs or postpositions which are hardly translatable into other languages. Constructions with complex particle verbs which combine a particle expressing a path of motion with a simplex verb that expresses a manner (but not a motion), constructions with a non-motion manner verb accompanied by a path satellite, or syntactic structures that combine a modal verb with a path satellite are typical for the German language as they combine in one structure expressions of path and manner of motion.

The study presents the theoretical aspects of these different categories highlighting the «German way of thinking and speaking».

It further illustrates the difficulties encountered when trying to translate the above examples into the verb-framed language French, which often omits the expression of manner.

Keywords: typology, satellite-framed languages, verb-framed languages, path of motion, manner of motion, German

1. INTRODUCTION

Since Talmy's (1985, 2000) and Slobin's (1996, 2000) seminal works about the typological differences in the expression of motion and location in different languages, it is well-known that Romance languages belong to the category of verb-framed languages, whereas Germanic languages are characterized as being satellite-framed languages. This terminology finds its motivation in the lexicalization preferences for the expression of motion events in each typological group. Romance languages, e.g., French or Spanish, express the path of motion in the main verb, whereas Germanic languages like Dutch or German favour a so-called 'satellite' (see Talmy 2000 for the terminology) for the expression of a path or a trajectory. Compare the following underlined elements in the French and German examples (1) and (2).

(1) *Elle entra dans la cuisine, traversa la salle à manger, pour sortir de la maison.*

Lit. 'She entered the kitchen, crossed the living-room, to exit the house.'

(2) *Sie trat in die Küche hinein, lief durch das Wohnzimmer durch, um aus dem Haus zu rennen.*

Lit. 'She walked into the kitchen, ran through the living-room (through), to run out of the house'.

In example (1) French selects three main verbs for the expression of the motion path, whereas German (example (2)) uses prepositions or particles to express the same path. Additionally, Germanic languages express the manner of motion in the main verb (e.g., in example (2): *trat*, *lief* or *rennen*). This dimension is not so relevant in Romance languages and consequently is often not expressed in these languages or alternatively is expressed with a gerund or an adverb.

Many studies have focussed on the typological differences between different languages. If we simply consider comparative studies of Romance languages with Germanic languages we can quote among others, Berthele (2004), (2006) and Hottenroth (2002) for a comparison of French and German, Pourcel and Kopecka (2005) for a comparative study of French and English, Lemmens and Perrez (2010) for Dutch as compared with French or De Knop and Perrez (under review) for a comparison of Dutch, German and French expressions of motion events. The studies by Lemmens and Perrez (2010) and by De Knop and Perrez (under review) further deal with the typologically motivated difficulties encountered by foreign language learners. It is interesting to observe that most studies pay less attention to the expression of the manner dimension (except for a few isolated studies, e.g., Pourcel (2009) for English as compared with French). This can probably be explained by the following assumptions:

- Talmy (2000: 281) claims that the expression of the path is the most basic information, it constitutes the core component; the manner expression on the other hand is a subsidiary dimension.
- The differentiation between satellite-framed and verb-framed languages is based on the expression of the path.
- The manner dimension is not so relevant for speakers of Romance languages as it is often not expressed. In his contrastive study of translations of English sentences into the Romance language Spanish Slobin (2000) has shown that the manner expression is often missing which makes it further understandable why a description of this dimension is less attractive.
- The study by Pourcel (2009) aims at assessing which variable between path and manner is cognitively more salient to subjects. She provides evidence (2009: 385) for the fact that speakers of a Romance language, e.g., French, recall better the expression of path, whereas English speakers as representatives of a Germanic language better remember the expression of manner.

Our study aims at taking a closer look at this neglected dimension of the manner of motion as it is realized in German. It will show that German is characterized by a manner salience. The following section 2 will describe the different levels at which the manner of motion is realized in German. It will become obvious that the manner salience is not restricted to motion verbs as the core of the lexicalization pattern but that it pervades several levels in the German language. In section 3 we will illustrate the difficulties encountered by French-speaking students with the German expressions of manner of motion, thereby showing that many problems have something to do with the «German way of thinking and speaking» (Slobin 1996). Finally, section 4 will draw the conclusions and present the results of the study.

2. REALIZATION OF THE MANNER DIMENSION IN GERMAN

Talmy (1985 and 2000) and Slobin (1996 and 2000) concentrated their study of the expression of motion events on the lexicalization patterns realized by motion verbs and satellites. We will show in this section that the manner dimension is not only expressed at the level of motion or location verbs in German but that it pervades several levels of lexicalization. In the following we will offer a systematic overview of all the realization possibilities of the manner dimension in German. Let us start with simplex verbs.

2.1. Simplex Motion Verbs

German as a Germanic language expresses motion in a very differentiated way as it uses different motion verbs to express the way individuals are changing places or objects are being moved (see De Knop and Dirven 2008). Languages from a different typological category, e.g., Romance languages like French or Spanish, also have several motion verbs but these verbs are used very differently. In the German motion and posture expression there is an

obligation to specify the manner of motion, which does not pertain to French (or even the Germanic language English). So consequently, the German speaker will alternatively use the verbs *fahren* ('to drive with a boat, car, ship'), *gehen* ('to go on foot'), *fliegen* ('to fly'), *stellen* ('to put in an upright position'), *setzen* ('to put in a sitting position') or *legen* ('to lay'), whereas French will rather use very general verbs like *aller* ('to go') or *mettre* ('to put'). If one is living in Europe or America he/she cannot say in German

(3) *Ich gehe nach Peking.* ('I go to Beijing'),

as this would imply that he/she goes on foot.¹

2.2. Simplex Location Verbs

A similar differentiation pertains to the expression of location² in German which focusses on the manner of location which is not the case in e.g., French (see also the studies by Ameka and Levinson (2007) for a comparison of different languages, by Kutscher and Schultze-Berndt (2007) or Serra-Borneto (1996) for a description of German and by Lemmens (2002) and Lemmens and Perrez (2010) for a study of Dutch posture verbs). In German there is an obligation to use different verbs to express the location of human beings, animals or objects, e.g.

(4) *Die Vase steht auf dem Tisch.* Lit. 'The vase is standing on the table'.

(5) *Das Buch liegt auf dem Tisch.* Lit. 'The book is lying on the table'.

French (or even the Germanic language English) on the contrary favours very general verbs, e.g., *être* 'to be' or *se trouver* 'to be found'. Compare the following examples (4') and (5'):

(4') *Le vase est/se trouve sur la table.*

(5') *Le livre est/se trouve sur la table.*

These differences based on simplex verbs are very well-known, they have already been described at great length, that is why we will not go further into the details. Let's now turn to other levels of lexicalization which are much more complex.

2.3. Complex Local Adverbs or Postpositions

Complex local adverbs or postpositions are a favoured expression of the manner dimension in German, they function as satellites. Compare the following examples from the German corpora of the Digitales Wörterbuch der Deutschen Sprache (DWDS) and of the Institut für Deutsche Sprache (IDS) in Mannheim:

¹ Still there is one possibility where such a sentence would be acceptable, but with a different meaning. It would then imply that one is moving to Beijing, to work there for instance.

² Talmy considers location to be motion but in a wider sense (2000: 28).

(6) *Dann kam der Tornado bis auf den See herunter.* (IDS: BRZ07/AUG.)

Lit. 'Then came the tornado up to on the lake downwards.'

(7) *Das Wetter bringt Schnee bis an den See hinunter.* (IDS: A00/MAR.16690)

Lit. 'The weather brings snow up to the lake downwards.'

(8) *Ein herrlicher Wanderweg bis auf den Berg hinauf.*

(www.peterkamin.de/Harz/harz.htm)

Lit. 'A wonderful path up to the mountain upwards.'

The complex local adverbs or postpositions consist of two elements: (i) The first constituent is a particle expressing the vantage point (Langacker 1987: 122-126) or the perspective of the speaker, i.e., a (fictive) movement towards the speaker (with *her-*) or away from him/her (with *hin-*). (ii) The second element of the complex local adverb is a preposition which also expresses a path but additionally a manner, e.g., *unter* ('under'), *hinter* ('behind'), *über* ('over'), *an* ('at'), *auf* ('on'), *vor* ('before'),...

Complex local adverbs are favoured in German but hardly translatable into other languages (See De Knop *fc.* 2013), as testified by the awkward English translations above or the corresponding translations into French hereunder:

(6') Lit. 'Alors la tornade vint jusque sur le lac (vers le bas).'

(6'') 'Alors la tornade s'abattit sur le lac.'

(7') Lit. 'Le temps amène de la neige jusqu'au lac (en bas).'

(7'') 'Le temps amène de la neige jusqu'au bord du lac.'

(8') Lit. 'Un chemin merveilleux jusqu'à la montagne (en haut).'

(8'') 'Un chemin merveilleux qui monte jusqu'à la montagne.'

The English translations skip the first part of the complex local adverb, i.e., the vantage point, whereas the French translations have a tendency to skip the local adverbs altogether. If French speakers want to express the local dimension at all they will rather use other lexicalization patterns, i.e., full verbs (example 6''), another nominal group (*au bord* in (7'')) or a relative clause, e.g., *qui monte* in (8'').

German is characterized by a wide variety of possible combinations between the two constituents as illustrated in the following examples:

(9) *Die Häuser reichen bis ans Wasser heran.* (DWDS Kernkorpus)

Lit. 'The houses reach up to the water to at.'

(10) *Getanzt wurde bis in die Morgenstunden hinein.* (IDS: A00/APR.26150)

Lit. 'It was being danced up to the morning hours into.'

(11) *Sie will auf ihn warten bis über den Tod hinaus.* (IDS: A01/AUG.24164)

Lit. 'She wants to wait for him up to over the death over'.

For an overview of the possibilities see De Knop (*fc.* 2013).

2.4. Complex Prepositional Groups with *bis*

Prepositional groups introduced by *bis* ('up to/until') are complex in the sense that the following nominal group after *bis* is often introduced by another preposition³. Let's look at some examples.

(12) *Ich werde dich lieben bis in den Tod.* (DWDS Kernkorpus)

Lit. 'I will love you till into death.'

(13) *Die Wut steht ihm bis über den Kopf.* (DWDS Kernkorpus)

Lit. 'Anger stands till over his head.' = 'is overwhelming him'

(14) *Er arbeitete (spät) bis in die Nacht.* (IDS: I00/DEZ.75273)

Lit. 'He worked (late) till into the night.'

In these complex groups the preposition *bis* expresses the path of motion, either a spatial trajectory, e.g., example (13), a temporal path like in example (14) or a metaphorical trajectory, e.g., example (12). The following preposition often expresses the manner, sometimes also a path. Unlike other languages German is characterized by a great diversity of manner prepositions after *bis* (for an overview see De Knop (2010); compare also Hottenroth (2002)): *bis an die Grenze* ('up to the border'), *bis in die Nacht* ('till into the night'), *bis in den Tod* ('till into death'), *bis über den Kopf* ('up to over the head'), *bis unter das Dach* ('up to under the roof'), *bis hinter den Horizont* ('up to behind the horizon'), *bis zum Gartentor* ('up to the garden gate'), *bis ans Knie* ('up to at the knee'), *bis vor Jahren* ('until before years'),... The selection of the second preposition depends on the noun in the prepositional group whose lexical frame presupposes a built-in scale determining the choice of this preposition. *Bis* evokes the notion of limit exemplified in the so-called 'collocates' (Stefanowitsch/Gries 2003), e.g., *Grenze* ('border'), *Rand* ('side'), *Horizont* ('horizon'), *Tür/Tor* ('door/gate'), but also in body-parts like *Ohren* ('ears') or *Zähne* ('teeth'),... Here too it seems that German offers many possibilities to express the manner of motion which are not really present in French or even English.

Translation difficulties (see e.g., the translations of the above examples) often result from the combination of *bis* which expresses a particular trajectory towards a goal and the second preposition which focusses on a different path, e.g., examples (12) and (13). But they can also depend on the prominence of the manner dimension in German like in example (14).

2.5. Constructions with Complex Particle Verbs

German being a satellite-framed language it favours the expression of the path of motion in satellites, e.g., within constructions featuring complex particle verbs. This explains for instance why a sentence like (a) *Die Kinder laufen rüber (über die Straße)* ('The children go/run over (over the street)') sounds more natural than (b) *Die Kinder überqueren die Straße* ('The children cross the road'). In the first sentence (a) the path is expressed by a satellite,

³ Except for a few examples where *bis* is followed by a noun without article, e.g. *Wir bleiben bis Morgen/kommenden Montag* ('We stay until tomorrow/until next Monday') or *Der Zug fährt bis Paris/Frankreich* ('The train goes/travels till Paris/France').

i.e., *rüber*, whereas in (b) the path is expressed by a full verb (which corresponds to the lexicalization pattern of Romance languages). The satellite in (a) is compounded with a main verb expressing a manner of motion, i.e., *laufen* ('run'). Interestingly, this lexicalization possibility is extended in German to such compounds consisting of a path of motion satellite with a non-motion simplex verb, e.g.,

(15) *Bürgerliche, die in die Kaiserfamilie einheiratete.* (IDS: A09)

Lit. 'Bourgeoise who married into the imperial family.'

One can also 'marry into a country, a region', e.g.

(16) ..., *der vor 36 Jahren nach Waldsassen einheiratete.* (IDS: M05)

Lit. '...who married into Waldsassen 36 years ago.'

Here are some more examples:

(17) *Wer sich so nach oben durchgeboxt hat...* (IDS: BRZ05)

Lit. 'Who has boxed himself through upwards...'

(18) *Michael Schumacher lächelt alle Zweifel weg.* (Berliner Morgenpost, 27.12.2009)

Lit. 'Michael Schumacher smiles all doubts away.'

The non-motion verb often expresses a manner, as illustrated in example (17) or (18). But a simple action, process or state verb which does not as such express a manner is also possible in such constructions, e.g., *heiraten* ('to marry so.') in example (15) or (16), *lachen* ('to laugh') or *arbeiten* ('to work') in the following examples:

(19) *So schön lacht Sylvie van der Vaart (31) den Krebs weg...*

(Bild.de, 14.07.2009 - 19:04)

Lit. 'Sylvie van der Vaart laughs the cancer away in a pretty way'.

(20) *Man muss sich mit dem Auto - teilweise - durch ein Menschengewühl durcharbeiten, so viele Menschen stehen einfach herum.* (IDSSOZ10/JAN.03268)

Lit. 'One must – partly – work oneself through through a crowd of people, so many people simply stand around'.

In order to describe such German examples the whole construction in which these particle verbs are embedded has to be considered. The syntax of the examples can best be studied within the framework of Goldberg's Construction Grammar (1995 and 2006). According to Goldberg the examples under investigation in this paper correspond to 'caused motion constructions'. These consist of several elements:

(i) at the semantic level: of an agent, a patient, a verb and an oblique argument;

(ii) at the syntactic level: of a subject, a direct object, an oblique object and a verb (see Table 1 below).

As Construction Grammar postulates a narrow link or continuum between syntax and lexicon both levels are strongly interrelated and cannot be separated from each other. The

particle contributes to the meaning of the construction, and conversely, any verb associated with a particle in such a construction becomes either transitive or reflexive and can be interpreted as a ‘caused motion verb’.

Table 1. Caused motion construction (Goldberg 1995: 3-4)

Caused motion C°	X causes Y to move Z	Sub	V	Obj	Obl
		<i>Pat</i>	<i>sneezed</i>	<i>the napkin</i>	<i>off the table</i>

The oblique argument which represents the path of motion is expressed by the particle and/or by another satellite (prepositional phrase/adverbial) which can sometimes be redundant with the particle, e.g., (17') *Er hat sich durch die Menschenmenge durchgeboxt*, ‘He fought himself through [verb particle] through [preposition] the crowd of people’. In the case of our examples the separable particle which appears in the compound verb is the oblique argument; the non-motion verb becomes transitive in the particular construction.

The motion expressed with the particle verb is often metaphorical:

- (21) *Du hast etwas (in den Text) hineininterpretiert*. Lit. ‘You have interpreted something into the text.’ = ‘You’ve added a meaning to the text.’
- (22) *Sie konnten das Problem wegdiskutieren*. Lit. ‘They could discuss the problem away.’ = ‘They could eliminate the problem by discussion.’
- (23) *Heute hat sich Lea ins Leben zurückgekämpft* (Welt.de, 16. Februar 2007)
Lit. ‘Today Lea has fought herself back into life.’
- (24) *Die Regierung hat sich bis Oktober durchgelogen*. (Spiegel.de, 21. Oktober 2003)
Lit. ‘The government has lied itself through until October.’ = ‘The government has come through until October by lying.’

For further details see Talmy (2000: 248) and Gallez (in preparation).

Because of the synthetic character of the German compound verbs, which ally in one and the same verb the expression of path with the satellite and the expression of manner in the simplex verb, the translation of such constructions into French is often problematic. In the translations the German satellite particle for the path of motion will be expressed by the main verb in French, the manner of motion will be expressed in French by a gerund or an adverbial, e.g., example (23) here above would be translated into French as ‘Léa est revenue à la vie en se battant’. As the manner of motion is more scarcely expressed in French the translated construction will sound rather unnatural.

2.6. Constructions with Non-Motion Manner Verb + Path Satellite

The following category is close to the preceding one in that the path of motion is also expressed by a satellite and the manner with a simplex non-motion verb, but in the examples of this category the simplex verb and the satellite appear separated in the construction and not as a compound.

Again, the whole construction has to be considered because the different syntactic elements that realize the motion event are spread over several words in the construction. Let's have a look at some examples:

(25) *Die Mutter hat ihren kleinen Sohn in den Schlaf gewiegt.*

Lit. 'The mother has rocked her little son into the sleep.'

(26) *Ein Unbekannter klingelte die Bundeskanzlerin Merkel aus dem Schlaf.*

(http://www.focus.de/politik/deutschland/sicherheitspanne-unbekannter-klingelt-merkel-aus-dem-schlaf_aid_439422.html, 26.09.2009, 16:21)

Lit. 'An unknown (person) rang the chancellor Merkel out of the sleep.'

(27) *Mein Bruder heiratete nach Amerika.* Lit. 'My brother married to America.'

(28) *Colin Firth hat sich im neuen Film «The King's speech» zum Oscar gestottert.*

(<http://www.abendblatt.de/kultur-live/article1799316/Colin-Firth-stottert-sich-zum-Oscar-Portman-brillant.html> 28.02.2011, 10:43 Uhr)

Lit. 'Colin Firth stuttered himself in his new film «The King's speech» to the Oscar.'

The translation of these examples into French is problematic. A translation is sometimes possible and acceptable but it expresses something completely different, e.g., in example (25') or (27'):

(25') Lit. 'La mère a bercé son jeune fils dans le sommeil.'

(27') Lit. 'Mon frère se marie en Amérique.'

In these French translations it is simply expressed that the mother is rocking her young son while he is asleep (25') or that my brother marries in America (27'); the German examples additionally express a path of motion, i.e., that the mother rocks her son until he falls asleep (25)⁴ or that he marries an American woman (27).

This last example is even more intricate as *America* stands metonymically for the American woman the man is going to marry. In order to express this additional meaning of the path of motion French speakers will have to use other patterns which privilege additional full verbs (e.g., *réveilla*, 'woke her up' in (26')) or secondary clauses (*pour qu'il s'endorme* 'so that he falls asleep' in (25')), e.g.,

(25'') 'La mère a bercé son jeune fils pour qu'il s'endorme.'

(26'') 'Un inconnu sonna chez la chancelière Merkel et la réveilla.'

This corresponds to the lexicalization patterns in Romance (as verb-framed) vs. Germanic (as satellite-framed) languages described by Talmy. What is unusual with these examples and therefore problematic for French learners for instance is that the expression of motion is only present at the level of the satellite and not at the level of the simplex verb; the German verb is a non-motion verb that expresses a manner. This is particularly obvious in example (28) which French speakers would probably translate with an additional gerund:

⁴ The expression of the path of motion is also sustained by the German morphosyntactic case-marking as it is the accusative which is being used for the expression of a motion along a path towards a goal (for more details see De Knop 2010).

(28'') 'Colin Firth a remporté l'Oscar pour son film « The King's speech » en bégayant.'

In this example it is impossible to translate the path of motion into French. So, the great difference between German and French is that German expresses motion solely with a satellite expressing the path of motion whereas French expresses the path of motion with a full verb. The German expression of manner (but not of motion) is in a way "alien" in the French translations.

2.7. Patterns with Modal Verb + Path Satellite

Let us close the description of the different realizations of the manner dimension in expressions of motion with a closer look at patterns with a modal verb and a path satellite. The main verb (= infinitive) expressing motion is missing (but in a deeper structure present):

(29) *Mein Bruder will in die Schule (gehen).* Lit. 'My brother wants (to go) to school.'

(30) *Er darf über die Straße (gehen).* Lit. 'He may (go) over the street.'

The main verb expressing the path of motion can be skipped because the path of motion is expressed by the prepositional group (*in die Schule/über die Straße*). Here we can refer to the 'economy-of-form factor' described by Filipovic and Vidokovic (2010: 284). With the modal verb it is the expression of manner which is prevailing. Such patterns are not possible in Romance languages because the path of motion cannot be expressed by a satellite like in German.

2.8. Summary

With the description of the expression of motion events in German it has become clear that the expression of manner pervades all levels of linguistic complexity, i.e., the level of simplex verbs, of complex local adverbs, of complex prepositional groups or of complex constructions. The expression of the manner of motion is often conflated with the expression of path. This is particularly obvious with complex local adverbs, with complex prepositional groups, or with particle verbs. The different possibilities are summarized in Table 2.

The strength of the German language is its great flexibility in the combination of path and manner expression in compact or synthetic groups, e.g., compound verbs, compound adverbs or prepositional groups. Translation difficulties of German expressions of motion into a Romance language very much result from the synthetic character of these expressions conflating path and manner in one (compound) expression. Romance languages favour more analytic expressions of these two dimensions, clearly separating path from manner, often even omitting the expression of manner. Let us now turn to the difficulties encountered by French-speaking learners of German.

Table 2. Different expressions of manner and path of motion

	Syntactic Structure	Path Expression	Manner Expression
(i) Motion verbs	Simplex V	(Satellite)	Different motion Vs
(ii) Location verbs	Simplex V	(Satellite)	Different location Vs
(iii) Complex local adverbs	Compound adverb	Particle for expression of vantage point (<i>hin-/her-</i>)	Preposition 2
(iv) Complex prepositional groups	Complex prepositional group (<i>bis</i> + Prepos. Phrase introduced by Prepos. 2)	Preposition <i>bis</i>	Preposition 2
(v) Constructions with complex particle verbs	Compound V (+ Satellite)	Particle (+ Satellite)	Non-motion V
(vi) Constructions with non-motion verbs	Simplex V + Satellite	Satellite	Non-motion V
(vii) Patterns with modals	Modal V + Satellite	Satellite	Modal V

3. DIFFICULTIES ENCOUNTERED BY FRENCH-SPEAKING LEARNERS OF GERMAN

Since Slobin's contrastive studies (1996 and 2000) of English and Spanish it is clear that learners belonging to a verb-framed language like Spanish encounter difficulties when learning a satellite-framed language. In the previous section we have described the differences in the expressions of manner (and path) between the satellite-framed language German and the verb-framed language French. This section will present and discuss the results of some tests done with French-speaking learners of German which confirm these difficulties.

3.1. Simplex Motion Verbs

As we saw in 2.1., German will use a variety of motion verbs depending on the manner of motion whereas French uses a very general verb, e.g., *aller* for all sorts of motion. This differentiated use in German is not optional but belongs to the correct way of expressing motion. This difference between the Germanic and the Romance language leads to difficulties which were confirmed by a test conducted with 34 French-speaking students of the B2/C1 proficiency level of the bachelor studies of Germanic languages. They were asked to translate 20 motion and location sentences from French into German. Here are some examples:

- (31) *Cet été ma tante ira aux Etats-Unis.* ‘This summer my aunt will go to the United States.’
 (32) *Pierre entre dans la cuisine.* ‘Pierre goes into the kitchen.’
 (33) *En été, nous allons à la mer du Nord.* ‘In the summer we go to the North Sea.’

The results confirmed our expectations: only 31% of the students used the correct motion verb in their German translation, which suggests that the great majority of French-speaking students (69%) underused the motion verbs as needed in German. In most wrong answers we found the very general verb *gehen* ‘to go’ which is a reproduction of the French lexicalization pattern with *aller*. Sometimes, a wrong motion verb was used, e.g., the verb *setzen* ‘to set’ for a bottle that is put into the fridge in a vertical or horizontal position.

3.2. Simplex Location Verbs

The same problems occurred with another translation test that concerned the use of German location verbs like *sitzen* ‘to sit’, *stehen* ‘to stand’ or *liegen* ‘to lie’ (see 2.2.). Fifteen French-speaking students (B2/C1 level) of the bachelor studies of Germanic languages were asked to translate 20 motion and location sentences from French into German, e.g.,

- (34) *Le bébé est dans sa chaise d'enfant (der Kinderstuhl).* ‘The baby is in its high-chair.’
 (35) *Où est le téléphone? Sur la table près du fauteuil.* ‘Where is the telephone? On the table near the settee.’
 (36) *L'enfant est dans son lit.* ‘The child is in its bed.’

Here again the translations by the French-speaking students were characterized by an underuse of the proper German location verb: only 38% of the students used the correct German verb. The uncorrect answers (62%) were characterized by a predominance of the very general verb *sein* ‘to be’. Consequently, the manner of motion is not expressed by French learners of German.

3.3. Constructions with Complex Particle Verbs

Examples of compound verbs consisting of a path particle and a non-motion simplex verb are very productive in the German press, e.g.,

- (37) *Am selben Abend wurde in Jette Joops 40. Geburtstag hineingefeiert.*
 (netzzeitung.de 18. Feb 2008 13:20)
 Lit. ‘On the same evening Jette Joop’s birthday was celebrated into.’

It seems that French speakers have many difficulties in understanding such examples, as shown by a translation test from German into French. Eighteen French-speaking students (B2/C1 level) from a Department of translation and interpretation studies at a Brussels high school were asked to translate 10 German sentences with such complex particle verbs. The manner dimension – which in German is expressed by the non-motion simplex verb with

which the satellite is compounded – was translated in 40.6% of the examples. This last figure has to be relativized as some of the translations into French proposed by the students were in principle correct but very unusual (2.8%), so that only 37.8% of the translations were considered to be acceptable. Still, this figure remains rather high compared with the claims in different studies (see e.g., Slobin 2000) that the manner of motion is scarcely translated or even completely omitted in translations by speakers of Romance languages. We can imagine that it is the focus on the main German verb – the main verb being the privileged lexicalization pattern for the expression of path in French – which allows us to explain why students translated the manner of motion at such a high rate. This assumption would also justify why the path of motion in the German examples was correctly translated in only 30.6% of the examples: as the path of motion is expressed by a satellite, i.e., a particle as the first constituent of the compound verb – a lexicalization pattern which is not present in French – there is a tendency not to express it at all in the translated sentences. Also the synthetic character of the German motion expression altogether (path + manner in one single compound) seems to be problematic for French speakers. Last but not least, the whole German construction in which the compound is being used is completely different from the French construction (see Section 2.5.); this can be a further cause for the impossibility to translate the German sentences at all (in 13.3% of the cases).

3.4. Constructions with Non-Motion Verb + Path Satellite

Similar observations have been made with a test which concerned German constructions with a non-motion (manner) verb and a separate particle, e.g., (28) *Colin Firth hat sich im neuen Film «The King's speech» zum Oscar gestottert* (Lit. 'Colin Firth stuttered himself in his new film «The King's speech» to the Oscar'). The same group of eighteen French-speaking students was asked to translate 10 sentences with a non-motion verb accompanied by a path satellite. The translation of the manner of motion succeeded in 37.2% of the sentences, but again some of them were awkward or unusual (5%), which means that only 32.2% of the translations were acceptable. The path of motion was correctly translated in 31.1% of the examples.

In 26.1% of the sentences the students were unable to propose a translation at all. This is probably due to the difference between the German and the French constructions. It is not enough to know the meaning of the non-motion verb and of the path satellite to understand what is exactly meant. Here again the problems can be explained by the use of a satellite in German to express the path but which is combined with a non-motion verb expressing the manner of motion, a lexicalization pattern not available in French.

The manner dimension is more rarely expressed in French but if it is expressed at all then with different means:

(i) with a gerund, e.g.

(26) *Letzte Nacht klingelte ein Unbekannter die Bundeskanzlerin Merkel aus dem Schlaf.*

Lit. 'Last night an unknown (person) rang the chancellor Merkel out of the sleep.'

→ 'La nuit dernière, un inconnu a réveillé la chancelière Angela Merkel en sonnant'.

(ii) with a nominal group, e.g.

- ‘La nuit dernière, un inconnu a réveillé la chancelière Merkel à coups de sonnette’.
 (iii) with different main verbs:
 → La nuit dernière, un inconnu sonna chez la chancelière Merkel et la réveilla.

3.5. Summary

The following Table 3 brings a summary of the test results for the translation of simplex motion or location verbs. There is an underuse of different motion verbs by French-speaking learners of German and consequently a lack of expression of the manner of motion.

Table 3. Results of the translation test (simplex motion and location verbs)

	Correct translation: several distinctive motion verbs	Uncorrect translation: one single general verb
Simplex motion verbs	31%	69%
Simplex location verbs	32%	68%

The following Table 4 summarizes the results of the translation tests of complex particle verbs and constructions with a path satellite + a non-motion verb.

Table 4. Results of the translation tests (complex particle verbs and path satellite + non-motion verb)

	Translation of manner	Unusual translation of manner	Translation of path	Impossibility to translate
Complex particle verb	37.8%	2.8%	30.6%	13.3%
path satellite + non-motion verb	37.2%	5%	31.1%	26.1%

Both tables clearly show that the expression of the path and the manner of motion is not so explicit in the French translation of the German constructions.

CONCLUSION AND PERSPECTIVES

In his description of motion events Talmy claims (2000: 152) that the path of motion is the most basic information in a motion event, while manner is a subsidiary one. After we have shown that German is very much characterized by a salience of the manner expression at different linguistic levels, this claim can be revisited and differentiated; in German it seems that the two dimensions of the path and the manner of motion play an almost equally important role. This is sustained by the German categories of examples in which the path and manner of motion are concomitantly realized in one and the same word, i.e., compound particle verbs, or one and the same construction, i.e., with a path satellite and a non-motion

manner verb. Such constructions are problematic for French speakers as the motion event is realized by a particle satellite in German which expresses the path of motion. French on the contrary generally expresses the path with a full verb. Manner is additionally expressed in German at the level of the non-motion verb.

The translation tests with our French-speaking students learning German brought to the fore that the typological differences between French and German are not unproblematic in the learning process: (i) the manner dimension is often skipped, e.g., with motion and location verbs, and (ii) constructions with particle verbs consisting of a path particle and a manner verb or constructions with a non-motion verb and a path satellite are difficult to understand and to translate.

The question now arises of how to deal with the differences between French and German in foreign language teaching. First, it will be necessary to do some awareness-raising exercises which show the different conceptualizations in Germanic languages and the salience of the manner dimension in German. In a second step it will be necessary to illustrate in which patterns manner salience is realized in German. And finally a methodology for the teaching of the more difficult constructions will have to be developed. To put it with Lantolf (1999: 29-30) the real issue is “to what extent is it possible for people to become cognitively like members of other cultures; that is, can adults learn to construct and see the world through culturally different eyes?” This will require some more research and hence belongs to future perspectives.

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Corpora

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Chapter 78

METAPHORICAL MOTION IN LINGUISTIC CONTEXT: PROCESSING IN ENGLISH AND SPANISH

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ABSTRACT

For both literal and metaphorical motion, languages like English tend to express path in the satellite following the main verb of the sentence, freeing the verb to convey manner of motion information. In contrast, languages like Spanish tend to express path of motion in the main verb and less often directly convey manner of motion. Interestingly, theories about metaphor processing differ in the emphasis they give to cross-linguistic differences. In two studies, the current investigation examined 60 (30 English-speaking, 30 Spanish-speaking) adult participants' judgments about and reaction times for literal and metaphorical motion in familiar phrases (Experiment 1) as well as novel motion event metaphors (Experiment 2). Results suggest that English speakers both more frequently identified familiar metaphorical sentences when they included a manner verb and were faster at making these judgments than were Spanish speakers. With novel metaphors, English speakers picked the literal match at a proportionally greater rate than did Spanish speakers and did so more slowly than did Spanish speakers when sentences contained a path verb. These results indicate that English and Spanish speakers approach the task of interpreting metaphors in different ways depending on the type of verb that is used in the sentence.

Keywords: motion event typology, conceptual metaphor, graded salience, career of metaphor, linguistic variation

1. INTRODUCTION

Conceptual Metaphor Theory (CMT; Lakoff and Johnson, 1980) highlights how metaphors occur regularly in everyday conversation, often in such a way that people are not conscious of them. Research on Conceptual Metaphor Theory generally uses common

metaphorical concepts, in which the target is related to a source or base, to categorize metaphorical expressions (e.g., MORE IS UP, LOVE IS A JOURNEY). This phenomenon of metaphorical language is fundamentally connected to the study of the relation between thought and language. If, as has been suggested by Conceptual Metaphor Theory, metaphor is not just a way of speaking but also the grounds for thinking, then differences across languages in the way metaphor manifests should be associated with differences in thought as well. The current study sought to compare the way speakers of two languages (English and Spanish) process both novel and familiar metaphorical motion sentences.

The idea that metaphor is a universal foundation for much of the way individuals talk and think has inspired research on how influential metaphor and other figurative speech can be on processing of language. Multiple studies have shown that the processing of utterances can be just as easily done when the expressions are metaphorical as when they are literally intended (Nayak and Gibbs, 1990; Gibbs and O'Brien, 1990; Allbritton, McKoon and Gerrig, 1995; Gibbs, Bogdanovich, Sykes and Barr, 1997). On the other hand, recent brain studies suggest that "accessing the meaning of words in metaphoric expressions is performed using the regular comprehension mechanisms but is more difficult" than is accessing the literal meanings of words (Arzouan, Goldstein and Faust, 2007, p. 70). So, while these results might imply that the processing of metaphor happens through the same channels that literal language processing uses, there still may be some disadvantage for metaphor. Processing of metaphor through the same mechanisms as literal language is consistent with the idea that metaphor is used to structure how people think in a foundational sense. However, some have begun to question the idea that all metaphorical language is necessarily connected to metaphorical thought, especially when the metaphors have been taken on in conventional language (e.g., Keysar, Shen, Glucksberg and Horton, 2000).

Lexical Concepts and Cognitive Models (LCCM, Evans, 2010), suggests that processing of both literal and figurative language relies on, in addition to a set of universal conceptual metaphors, individuals' integration of background knowledge with information that has been taken in through language in general sense-making. LCCM proposes that linguistic interpretation is mediated by both salience and complexity. In examples Evans provides, in which various items are introduced as 'intoxicants', things that are normally associated with intoxication, like whiskey, are more easily integrated into sentences such as "He knows whiskey is an intoxicant" than are other subjects, such as cough syrup and power, which are integrated decreasingly easily due to their increasing complexity (2010, p. 608). The complexity in this example comes from both normal association (or lack thereof) and relation of apparently incongruent ideas. In addition, Evans's ideas on salience stem from Giora's findings that novel metaphors are processed more slowly than are familiar ones due to the relevance familiar metaphors have for everyday thought (1999). Salience may be particularly relevant to understanding linguistic variation in the use and comprehension of metaphor and so is further detailed here.

Two theories have addressed the way in which metaphors may become salient in everyday language: the Career of Metaphor proposes a developmental process by which a novel metaphor can become conventionalized with repeated exposure; and the Graded Salience Hypothesis suggests that people will react more quickly to the meanings of words and phrases that are most conventional for their cultural situation, regardless of whether they are metaphorical or literal. Each of these theories is outlined below.

The Career of Metaphor theory (Bowdle and Gentner, 2005; Gentner and Wolff, 1997) proposes that new metaphors might be understood through a relatively laborious process the first time they are encountered and only later, with greater practice/rehearsal, would they be recognized in a rapid, relatively effortless manner. This model of processing suggests that new or novel metaphors would require effortful alignment of the target and base in order to be understood. However, once these metaphors have become habituated into the thinking of a person, they would be understood through a process of categorization, which would require less time and effort than alignment. A more conventional metaphor would only require the recognition of the mapping, not the search for relevant properties. As a result, according to this idea, novel metaphors would require processing through comparison of the base and target in order to map the necessary elements of similarity.

Consistent with the Career of Metaphor is the Graded Salience Hypothesis, which takes into consideration how salient different potential meanings of the same words might be to different speakers (Giora, 1999, 2002; Giora and Fein, 1999). According to this theoretical perspective, both a literal and a metaphorical meaning should be activated upon encountering a metaphorical expression. However, the most salient meaning will be processed first in this case. Thus, it is difficult to disregard a highly conventionalized metaphorical meaning even when the context supports a literal meaning. For instance, Giora (1999) has suggested that in highly familiar metaphors (perhaps idioms), such as ‘read my lips’ in English, individuals would process the metaphorical meaning ‘pay attention to what is said’ while also processing the request to use lipreading as a device to communicate in circumstances that called for absolute silence (p. 491). And for certain people, particular phrases may be more conventionalized than they would be for other people. Giora (2002) suggests that, for example, reference to the *West Bank* as meaning “occupied territories” is more salient to people living in Israel compared with people from elsewhere because of its immediate relevance to the political situation in Israel. In a study examining relatively familiar versus relatively novel metaphors, Giora and Fein (1999) found that familiar metaphors activated a metaphorical and a literal meaning in both literal and metaphorically biasing contexts. In contrast, less familiar metaphors only activated the metaphorical meaning in a metaphorically biasing context, not a literally biasing context. Both the Career of Metaphor and the Graded Salience Hypothesis might be useful in considering the ways that metaphors differ (or are the same) across cultures because of the way they consider habituation or salience for prediction of processing effort. Differences in salience or habituation may be related to linguistic context and will be investigated here in terms of motion event metaphors in English and Spanish.

1.1. Linguistic Variation in Metaphor

Kövecses (2005) has examined the use of metaphors in many distinct languages and found that there are some potentially universal conceptual metaphors (e.g., THE ANGRY PERSON IS A PRESSURIZED CONTAINER). In contrast, languages often construe the same metaphorical sources (e.g., anger) using targets that vary in how they relate to the source concept. According to Kövecses, the ways targets might differ include the amount of specificity in language that is expected, the degree of transparency of the metaphor and the degree of conventionalization, among others. He uses examples from Spanish and English in

metaphors about anger to show that whilst general metaphors can be acceptable in both languages (see example 1), in many cases more specific language used in metaphorical ways is accepted only in English (example 2).

1. a. "She went crazy."
b. "Ella se volvió loca." (She turned/became crazy).
2. a. "The news threw him into a terrible state of anxiety."
b. * "Las noticias lo lanzó al interior de un terrible estado de ansiedad."
(The news threw him into the middle of a terrible state of anxiety). (Kövecses, 2005, p. 154).

So, whereas the source of the metaphor is the same in all cases, only English can use the specific target language of 2a in realizing the metaphor. This restriction is probably related to the typology of motion event description in Spanish as detailed in the next section.

1.2. Motion Event Typology

Talmy (1985, 1991, 2000) noted that some languages, like English and German, generally express the path or direction of motion in a post verbal phrase and may use the main verb of the sentence to express other facets of motion, like manner (e.g., waddles *across the street*). These languages are known as satellite-framed, or S-languages, because they typically convey path of motion in a satellite of the main verb. On the other hand, many languages (e.g., Romance languages, Hebrew, Turkish, Greek, Korean) tend to place the path of motion in the main verb of the sentence and when they include description of the manner, often do so with a postverbal construction like a gerund or prepositional phrase (e.g., *cruce la calle, anadeando/crosses the street, waddling*). Such languages can be thought of as verb-framed (V-languages).

In support of this typological distinction, Naigles, Eisenberg, Kako, Highter, and McGraw (1998) found that, in describing videos of motion events, monolingual Spanish speakers used manner verbs in only 33% of their utterances, whereas monolingual English speakers used them in 91% of their utterances. This same basic pattern in S- and V-languages has been demonstrated in picture book narration (Berman and Slobin, 1994), bilingual speakers' interlanguage (Hohenstein, Eisenberg & Naigles, 2006), speakers' willingness to assign novel verbs to actions (Cifuentes-Férez and Gentner, 2006; Naigles and Terrazas, 1998), "Thinking for Speaking" (Gennari, Sloman, Malt and Fitch, 2002, Papafragou and Selimis, 2010), as well as non-linguistic thought (Hohenstein, 2005; Papafragou, Hulbert and Trueswell, 2008; though see Cardini, 2010 for conflicting results). As is apparent in this sample of literature in typology and cognition regarding motion events, the topic is widely researched with respect to literal language. Research is also beginning to appear in metaphorical motion event language.

1.3. Metaphorical Motion

Metaphorical motion involves the use of motion event language in the expression of ideas not involving motion as in Examples 1 and 2 above or in such sentences as “*Sally climbed to power by trampling on her co-workers*”, where it would be a highly unusual form of employment that could result in the literal intention of “climbing” and “trampling”. Work with metaphorical motion has begun to show that literal motion event language patterns are also present in metaphorical motion event language in both in adults (Özçalışkan, 2003; Wilson, 2006) and children (Özçalışkan, 2005). In her work with English- and Turkish-language newspapers, novels and spoken language, Özçalışkan (2003, 2005) found that across all sources in her study, English speakers used a higher percentage of manner verbs than did Turkish speakers when conveying metaphorical motion. At the same time, there were few differences between language groups in either primary or complex metaphorical mappings. That is, the types of concepts that appeared in metaphorical language did not differ across languages; only the way they appeared was language specific. Wilson (2006) obtained similar results with English and Spanish speaking monolinguals as well as bilinguals. Though speakers of both languages used similar metaphorical mappings, they did so in ways that were typical of their language pattern for literal motion.

1.4. Current Research

Given the previous work on the processing of metaphor and the research on typology and cognition related to motion event language in V- and S-languages, the current study set out to examine how metaphorical motion is processed by speakers of English and Spanish. The assumption of CMT is that when metaphors in English and Spanish express the same meaning, the underlying conceptual metaphors ought to be the same, regardless of surface structure. But how would these metaphors be processed in the different languages? It may be the case that linguistic variation affects the Career of Metaphor (Bowdle and Gentner, 2005) or that language typology affects the salience of particular phrases as in the Graded Salience Hypothesis (Giora 1999, 2002). As such, examining reactions to metaphors by people who speak different languages may reveal differences in how speakers process metaphorical language.

Two tests were designed to measure how speakers react to metaphorical motion in familiar phrases (Experiment 1) and novel phrases (Experiment 2). If the prominence of manner verbs in English motion event language heightens their salience in metaphorical motion, we would predict that English speakers would be more likely to recognize phrases as metaphors when they contain manner verbs than when they contain path verbs and that further, reaction times would be facilitated for metaphorical motion with manner verbs. Similarly, the identification of metaphors that contain path verbs should be salient and happen more regularly for Spanish speakers than identification of manner verb metaphors if the appearance of path verbs in the language more regularly is an influential force.

2. EXPERIMENT 1

The first experiment was designed to determine whether differences in typical language for metaphorical motion would influence speakers' recognition of familiar metaphors in normal isolated sentences. As such, participants read sentences depicting motion, either real or metaphorical, with either manner verbs or path verbs, and were asked to judge whether they represented literal or non-literal motion.

2.1. Method

2.1.1. Participants

Monolingual speakers of English and Spanish dominant individuals (but not monolingual in Spanish) were recruited to participate in this study. Each group consisted of 30 adults (English: 15 men and 15 women; Spanish: 16 men and 14 women) between the age of 25 and 40 (English $M = 33.14$, $SD = 4.09$, Range = 26-40; Spanish $M = 32.60$, $SD = 4.45$, Range = 26-39). There were no differences in age between groups.

Recruitment was carried out for both groups through a 'snowball' technique. This method utilizes acquaintances of the researcher, who then put the researcher in touch with acquaintances of theirs.

English speakers reported they did not know any other language beyond a 'travel' ability. Spanish speakers reported knowing English to varying degrees, some fluent, some conversational. None had begun learning English before the age of 7 in classes at school. Because this study was conducted in England, a nation in which anyone residing there would be expected to know some English, it was not possible to work with monolingual Spanish speakers. In addition, Spanish speakers were mostly born in Spain (25) but several came from Latin America (Mexico, Venezuela, Argentina, Dominican Republic). These points will be returned to in the discussion of results. However, note that being bilingual would – if anything – minimize the possibility of finding differences between groups.

Instruments. Stimulus materials consisted of sentences containing motion event verbs in English and Spanish. Sentences in each language had the same meaning. As much as possible, sentences were controlled for length such that a sentence in English had the same number of morphemes as the corresponding sentence in Spanish. On average, Literal sentences were 8.4 morphemes long in English and 8.2 morphemes long in Spanish, whereas Figurative sentences were 8 morphemes long in English and 7.5 morphemes long in Spanish.

There were 10 sentences depicting literal motion and 10 depicting metaphorical motion in each language. Within literal and metaphorical motion sentences, 5 contained a manner verb and 5 contained a path verb. The full list of sentences used in the experiment can be seen in Appendix A. However, to provide an example, Sentences 3a and 3b depict metaphorical motion with a path verb in English and Spanish.

3. a. "They have passed through this before."
b. "Ya han pasado por esto antes."
4. a. The little girl tripped over the jump rope.
b. La niña se tropezó con la cuerda de saltar.

Sentences 4a and 4b show literal motion with a manner verb in English and Spanish. The test sentences were generated in English first and then translated by a native speaker of Spanish¹. Those sentences that matched in verb type used in both languages were selected for use in the experiment.

Metaphorical sentences were rated as to their level of conventionality by 35 native English-speaking undergraduates who did not take part in the rest of the study. These undergraduates rated each sentence on a scale of 1 to 5, where 1 represented ‘highly unconventional’ and 5 represented ‘highly conventional’. Results show that these sentences were rated significantly more conventional ($Mean = 4.18$, $SD = 0.56$, $Mode = 5$), than would have been expected by chance (2.5), $t(34) = 19.04$, $p < .001$. Thus, the sentences are thought to be relatively conventional metaphors.

2.1.2. Procedures

The experiment was conducted on a MacBook G5 with a 13-inch screen using Superlab 4.0.7b. Stimulus materials were presented one at a time in an order randomized by Superlab.

Participants were tested individually in a quiet area while seated comfortably in a chair either with the laptop on a table in front of them or on their laps. Following reading and signing the consent form, participants read instructions on the computer screen. These instructions pointed out that some motion language refers to real motion, whereas other language refers to motion that is not real. It was then indicated that they should press the letter ‘F’ when they read a sentence they thought represented literal motion and the letter ‘J’ when the sentence represented non-literal motion. These instructions also informed the participant that reaction time was a factor and that they should make their choices as quickly as possible.

2.2. Results and Discussion

In order to address the ways that speakers of English and Spanish responded to real and metaphorical motion, data were treated in two ways: First, responses as to whether sentences were metaphorical or literal were noted and compared across language groups and verb type. Next, reaction times were compared in the same categories.

It should be noted that some Spanish sentences (and their English equivalents) were excluded from analysis after it was discovered that they were conventional only in Mexican Spanish. Three native speakers of Spanish from Spain selected sentences that constituted novel, rather than familiar, metaphors in Spain. As a result, four metaphorical sentences were removed from the dataset (two manner verbs, two path verbs), leaving six metaphorical sentences and ten literal motion sentences. See Appendix A for details of which sentences were used.

To summarize the data obtained in judgments of whether sentences were or were not metaphorical, Table 1 shows the number of responses to the metaphorical and literal sentences with manner or path verbs separately by language group.

¹ The native Spanish speaker was a speaker of Mexican Spanish. This became an issue when Spanish speakers from different regions participated in the study. Some sentences were eliminated. This is discussed in the Results section of each Experiment.

Table 1. Number of English speakers' and Spanish speakers' literal and metaphorical responses to literal and metaphorical sentences by type of motion verb

	Responses			
	English		Spanish	
Stimuli	Literal	Metaphorical	Literal	Metaphorical
Literal				
Manner	135	15	137	12
Path	130	20	126	24
Metaphorical				
Manner	9	81	23	65
Path	34	55	42	48
Total	308	171	328	149

Looking across manner and path, English and Spanish speakers differed in their choices of which sentences were metaphorical, $\chi^2(1) = 3.86$, $p = 0.05$, with English speakers picking metaphorical relatively more frequently than Spanish speakers when the sentence was metaphorical. In contrast, collapsing across the literal and metaphorical sentences, English and Spanish speakers did not differ in their choices depending upon whether the verb was manner or path, $\chi^2(1) = 0.26$, n.s. When examining the manner verb sentences only, English speakers had relatively more metaphorical responses when the sentence was metaphorical compared with Spanish speakers, $\chi^2(1) = 5.31$, $p = 0.02$. No differences between language groups were found in path verb sentences. That is, English speakers seem to respond more readily to manner verb sentences, as would be predicted by a developmental or usage based theory; Spanish speakers did not.

In order to analyze the reaction time data, responses that did not correspond to the expected one (literal or metaphorical) were removed. In this way, only 'correct' judgments of literal and metaphorical manner and path were included in the analysis. Then response times that were less than 200ms were removed as they are deemed to not be valid judgments (most of these had already been removed when unexpected answers were removed). Next the inverse was taken for reaction times as recommended by previous research (Greenwald, Nosek and Banaji, 2003; Ratcliff, 1993). The inverse value represents the speed of response as opposed to the latency, which is represented by the raw data. For clarity, means and standard deviations here are provided in latencies, though all analyses have been reported on inverted times².

Overall latency times by language group were 3496ms for English and 4281ms for Spanish and these were not significantly different. A further examination of the responses was conducted using a two-way repeated measures ANOVA, where Verb Type (manner, path) and Figurativity (literal, metaphorical) served as within-subjects variables, with Language (Spanish, English) as a between-subjects variable. Results suggest main effects of Verb Type, $F(1, 51) = 12.68$, $p = .001$, $\eta^2 = .20$, Figurativity, $F(1, 51) = 23.48$, $p < .001$, $\eta^2 = .32$, and two-way interactions between Verb Type and Language, $F(1, 51) = 5.80$, $p = .02$, $\eta^2 = .10$, and Verb Type and Figurativity, $F(1, 51) = 23.43$, $p < .001$, $\eta^2 = .32$. As can be seen in

² Analyses were also carried out on latencies, removing responses that were at least 2 Standard Deviations above the mean. While results were similar (albeit not as robust), inverted values were used in this report because the distribution of data was deemed closer to normal.

Figure 1, participants were faster overall at responding to manner verb sentences than they were to path verb sentences.

However, using paired comparisons, this was more evident of the English speakers, $t(29) = 3.75$, $p = .001$, $\eta^2 = .11$, than it was of Spanish speakers, $t(29) = 1.58$, n.s., which is consistent with the idea that English speakers would be more accustomed to hearing manner verb sentences than would Spanish speakers. In addition, participants were also faster at responding to literal sentences than to metaphorical sentences. In fact, participants responded more rapidly to literal manner verb sentences than they did to literal path verb sentences or metaphorical sentences of either verb type, all $t_s > 4.68$, $p_s < .001$, all $\eta^2 \geq .13$. The variance in the different categories appears great in the real response time values, particularly in the case of Spanish speakers' metaphorical path verb responses. However, the inversions show much less variance.

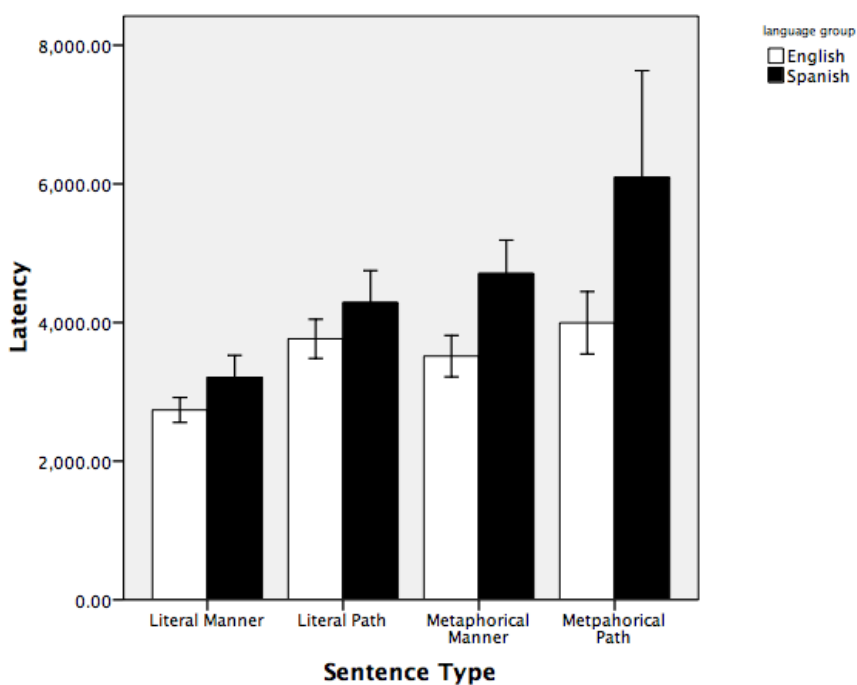


Figure 1. Means (error bars represent Standard Error) of Spanish and English

Hence, in the manner categories Spanish speakers took longer speakers' latencies in ms across literal and metaphorical uses of manner and path by verb type than did English speakers to respond correctly as to the literal or metaphorical character of the sentence. This was not true of the path verb sentences. The results of this study suggest that in judging sentences, English speakers identified metaphors more frequently than did Spanish speakers when the sentences contained a manner or a path verb. They were also quicker to respond to sentences with manner verbs (both literal and metaphorical) than were Spanish speakers. However, because the metaphors were fairly conventional, these were all sentences that participants should have been able to recognize. The next study examines how speakers of each language react to novel metaphorical uses of manner and path motion verbs.

3. EXPERIMENT 2

The second experiment was designed to determine how likely English speakers and Spanish speakers were to accept a new metaphorical motion expression. The items were divided between novel metaphors and familiar metaphors, each using either a manner or a path verb.

3.1. Method

3.1.1. Participants

The same participants took part in Experiment 2 following their involvement in Experiment 1.

3.1.2. Instruments

An additional 20 sentences were devised for this experiment. Ten of these sentences contained manner verbs and ten used path verbs. Half of each of these groups of sentences represented familiar metaphors and half were novel metaphors. Again, attempts were made to use sentences in English and Spanish that contained the same number of morphemes. This time Novel metaphors averaged 9.9 morphemes long in English and 10.1 morphemes long in Spanish, with Familiar metaphors averaging 8.86 morphemes in English and 9.71 in Spanish. Sentences were judged as to their conventionality by the same undergraduate students who rated the sentences in Experiment 1. Again, participants rated each sentence on a scale of 1 to 5, where 1 represented 'highly unconventional' and 5 represented 'highly conventional'. Novel sentences were rated significantly less conventional ($Mean = 2.39$, $SD = 0.44$, $Mode = 2$) than were familiar sentences ($Mean = 4.38$, $SD = 0.36$, $Mode = 5$), $t(34) = 29.63$, $p < .000$. Thus, the novel sentences should have seemed less recognizable as metaphors than did the familiar sentences.

When sentences appeared on the screen, they were accompanied by two photographs. Half of these photographs were literal depictions of the sentence, whereas the other half portrayed metaphorical meanings of the sentence. Literal and metaphorical depictions were presented half of the time on the left side of the screen and on the right side of the screen for the remainder. Participants were instructed to press the 'F' key when they thought the sentence matched the picture on the left and the 'J' key when they thought it matched the picture on the right. The experimental procedure was otherwise the same as that used in Experiment 1.

The full list of sentences can be seen in Appendix B. However, for purposes of illustrating the types of sentences used, sentences 5a and 5b below show novel manner verb use in English and Spanish.

5. a. "He danced through the menu."
b. "Bailó por el menú."
6. a. "We were circling that movie for hours."
b. "Rodeábamos varias horas alrededor de la película."

Sentences 6a and 6b show novel path verb use in English and Spanish. As in Experiment 1, sentences were generated first in English and then translated into Spanish by a native Spanish speaker. Sentences that matched in verb type in English and Spanish were selected for use in Experiment 2.

3.2. Results and Discussion

As with Experiment 1, it was necessary to eliminate some of the Spanish language sentences (and their English equivalents) due to the use of conventional Mexican phrasing. This was carried out for the familiar metaphorical statements only as the new metaphors did not exist in either language. Consequently, three of the manner verb sentences were removed from analysis. All of the remaining sentences were analyzed in two ways: First, choices of the metaphorical and the literal photos were examined in a nonparametric fashion by type of verb and novel/familiar metaphors. Next reaction times were analyzed by condition.

As is apparent in Table 2, both Spanish and English speakers more often gave a metaphorical than literal response. Indeed, this did not differ overall by language group, $\chi^2(1) = 3.07$, n.s. However, in the Novel Path condition English speakers picked the literal match at a proportionally greater rate than did Spanish speakers, $\chi^2(1) = 4.63$, $p = 0.03$. Within the other conditions there were no differences between language groups, all $\chi^2 < 2.4$.

Table 2. Frequencies of literal and metaphorical representations picked by English and Spanish speakers, separated by Verb Type and Novelty

	Responses			
	English		Spanish	
Stimuli	Literal	Metaphorical	Literal	Metaphorical
Familiar				
Manner	22	38	14	45
Path	22	128	22	127
Novel				
Manner	30	120	31	117
Path	57	93	39	109
Total	131	379	106	398

In terms of reaction times, the latencies, collapsing across sentence type for each language group were 6367ms (English) and 6357ms (Spanish), which were not significantly different. As in Experiment 1, a two-way ANOVA with Verb Type (manner, path) and Novelty (novel, familiar) as the within-subjects variables and Language (Spanish, English) as a between-subjects variable was run on the dependent variable Speed (inverse latency). Figure 2 shows the latency responses that are reflected in the current analyses of speed of reaction. There was a main effect of Verb Type, $F(1, 58) = 11.05$, $p = .002$, $\eta^2 = .16$, where participants responded faster to manner verb sentences than they did to path verb sentences. This was true across both types of metaphorical sentence (novel and familiar). In addition there was a main effect of Novelty, $F(1, 58) = 39.58$, $p < .001$, $\eta^2 = .41$, in which participants were faster to respond to familiar metaphors than they were to respond to novel ones. Finally,

a three-way interaction between Verb Type, Novelty and Language, $F(1, 58) = 3.42$, $p = .06$, $\eta^2 = .08$, was close to significant. Given the relevance to the hypotheses, this interaction was explored further, even though significance is deemed only marginal. The examination of reaction times in novel and familiar metaphors using paired comparisons led to only one significant distinction between speakers of English and Spanish. While English and Spanish speakers generally performed similarly to each other in the different conditions, English speakers were significantly slower than were Spanish speakers at deciding in the Novel Path condition, $t(58) = 2.23$, $p = 0.03$, $\eta^2 = .07$ (other differences were inconsequential, $t_s < 1.3$). As such, English speakers were both slower and picked the literal photograph more often than did Spanish speakers in the Novel Path condition suggesting that Spanish speakers were more likely than were English speakers to accept new metaphors when they contained a path verb.

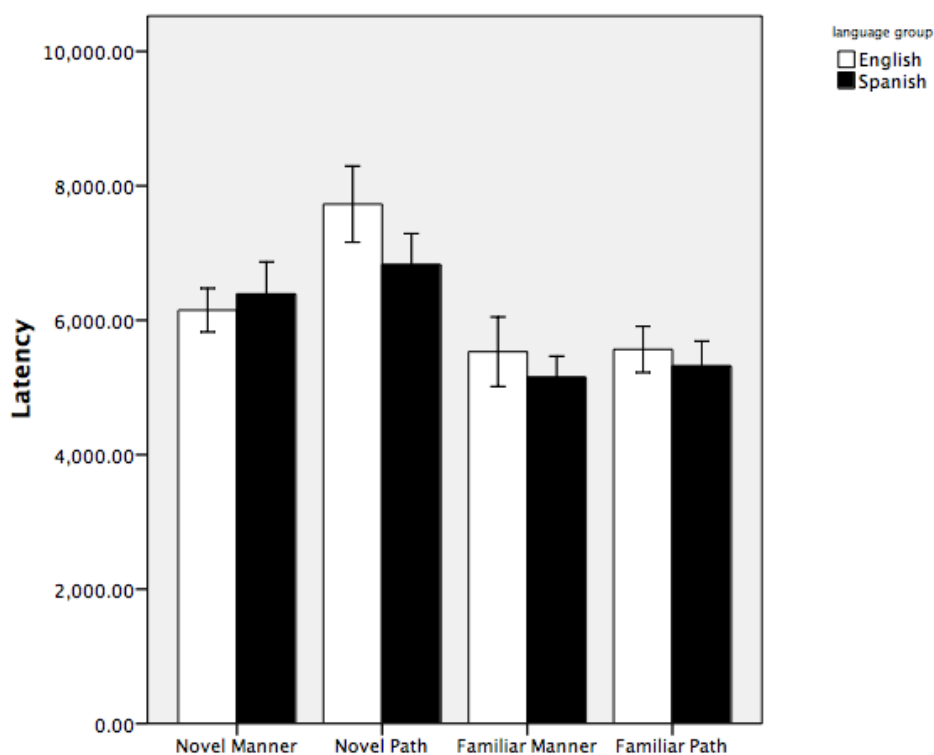


Figure 2. Means (error bars represent Standard Error) of English and Spanish speakers' latencies in ms to novel and familiar metaphors by verb type.

4. DISCUSSION

Spanish speakers and English speakers behaved differently from each other in the two different experiments. English speakers were faster in Experiment 1 at identifying sentences that contained manner verbs in both the literal and metaphorical motion conditions. Additionally, English speakers identified metaphorical sentences correctly more often than did Spanish speakers, especially when the metaphorical sentence contained a manner verb. In

Experiment 2 however, Spanish speakers were faster than were English speakers at responding to novel metaphors when there was a path verb in the sentence. Likewise, Spanish speakers were more likely to accept a novel metaphor that contained a path verb than were English speakers.

Results from these two experiments seem to indicate that processing of metaphor is facilitated in English speakers by the use of a manner verb and in Spanish speakers by use of a path verb. However, the results are not entirely clear cut. In distinguishing between familiar literal and metaphorical sentences, only manner verbs seemed to act as a facilitating mechanism. In other words, Spanish speakers were not faster at recognizing metaphors when they contained a path verb in that experiment. In addition, in the second experiment, only path verbs but not manner verbs acted as a facilitating agent and only for novel metaphors. So when English-speaking participants were asked to judge which photograph most suited the sentence on the screen, manner verbs did not significantly increase the likelihood of a metaphorical choice or the time of response. Why would the two experiments lead to results that differed in this way? It may be that the exclusion of three sentences in the novel manner condition in Experiment 2 decreased the chances of demonstrating differences between language groups. Alternatively, the presence of literal sentences in Experiment 1 may have provided a cue for English speakers (more than for Spanish speakers) to pay attention to the typology. In contrast, Experiment 2 contained only metaphorical sentences and Spanish speakers may have somehow latched on to this in a way that made path verbs a facilitative element. It would be useful to test both novel and familiar metaphors in other contexts to investigate more fully the nature of cross-linguistic differences. Finally, the difference in method may have made a difference to the way participants responded. Pairing photographs with sentences may have been harder than identifying metaphors, especially for certain types of sentences (indeed, the response times are somewhat greater in Experiment 2 than in Experiment 1). This method seems to be novel and should be further explored to see how it might be used in future studies.

4.1. Limitations and Future Directions

As noted previously, the Spanish speakers who participated in this study were not monolingual speakers of Spanish. And in this era it is difficult to find middle-class Spanish speakers anywhere who do not also speak some English. Though it is true that this limitation would seem to diminish the likelihood of finding differences between the language groups, differences were found in the two experiments reported here.

Future work should address this concern by conducting data collection with Spanish speakers in a country where Spanish is spoken, preferably in a monolingual environment. Such a study could also eliminate the variation in dialects as occurred here.

In addition, some of the stimulus materials could not be used because the sentences were conventional only in Mexican Spanish, whereas the majority of Spanish speakers in this study came from Spain. Though many metaphorical sentences could still be used in this study, the sentences that were excluded mostly contained manner verbs (5/7). Nevertheless, not all the sentences had to be excluded and differences were still found in metaphorical manner sentences in Experiment 1.

4.2. Theoretical Implications

The differences found between the two language groups were predictable, albeit modest, based on the typology of Spanish and English in both literal and metaphorical language. As such, it would seem that the typical motion event language patterns would provide a source of salience or habituation for the recognition of metaphors.

Spanish speakers were quicker to respond to and more willing to accept novel metaphors containing a path verb than they were for manner verb metaphors and faster compared to English speakers. They were possibly more prepared to encounter and deal with metaphors in path verb format than manner verb format because of a habituation to this type of motion event language. The same may have occurred for English speakers in distinguishing literal from metaphorical sentences. For these speakers, the appearance of motion events (literal or metaphorical) in language typical patterns seemed salient.

These findings are not inconsistent with the idea that speakers of different languages operate using universal conceptual metaphors (Lakoff and Johnson, 1980). However, they are particularly supportive of the idea that metaphors are instantiated in different ways according to conventionalization (Kövecses, 2005).

Moreover, these results suggest that there is more to the identification of metaphor than merely reliance on an underlying conceptual metaphor. As such, the Lexical Concepts and Cognitive Models theory (Evans, 2010) that incorporates elements of Conceptual Metaphor Theory (Lakoff and Johnson, 1980) with the processing of both literal and metaphorical language through paying attention to context, including factors like salience and complexity, may go further in explaining the nature of metaphor comprehension.

In particular, both the Graded Salience Hypothesis (Giora, 1999, 2002) and the Career of Metaphor Hypothesis (Bowdle and Gentner, 2005) are supported to some extent here because it would seem that language typology is linked to some conventionalization and/or salience of the way events, even metaphorical ones, are expressed in particular languages.

In other words, while there may be some validity to the idea that conceptual metaphor is an underlying (in some cases universal) mechanism involved in processing metaphorical language, it seems that LCCM, through its context-based model of processing both literal and figurative language, may provide a more accurate perspective on how people make sense of linguistic input. So, though the conceptual metaphors may be the same across languages, the conventionality of typologically consistent language may create a sense of salience that helps speakers to process both metaphorical and literal sentences.

CONCLUSION

As with studies on typology and cognition to do with literal motion event language, there appear to be some differences between speakers of two different language types (S- and V-languages) in terms of the processing of metaphorical motion event language. Just as speakers of English and Spanish are likely to choose meanings of novel verbs in ways that correspond to their language typology (Naigles and Terrazas, 1998) and may be influenced in their “Thinking for Speaking” (Sloman et al., 2002) or even nonlinguistic cognition (Hohenstein, 2005; Papafragou et al., 2008), participants in this study differed in how they responded to

metaphorical motion event language in ways that could be predicted by the language typology. Like literal motion event typology, manner verbs appear more frequently in English speakers' metaphorical motion language and path verbs appear more frequently in Spanish speakers' metaphors (Wilson, 2006).

This study provides evidence that these typological patterns make a difference in the processing of metaphorical motion language.

Overall, as Kövecses (2005) has suggested, language variation does seem to play a part in both the expression and comprehension of metaphorical language, at least in the case of metaphorical motion.

APPENDIX A

Stimulus Sentences for Literal/Metaphorical (Familiar) Responses Used in Experiment 1

Literal pairs

Manner Verbs

And then I ran for an hour.

Y luego corrí una hora.

The little girl tripped over the jump rope.

La niña se tropezó con la cuerda de saltar.

The children were jumping on the bed.

Los niños saltaban en la cama.

People like to walk in the park.

A la gente le gusta andar en el parque.

I climbed the tree.

Me trepé al árbol.

Path Verbs

I went out through the main door.

Salí por la puerta principal.

The boy always crosses the street in the same place.

El niño siempre cruce la calle del mismo sitio.

Sometimes he goes down the back stairs.

A veces baja las escaleras al fondo.

She was going in the building behind the group of tourists.

Entraba el edificio siguiendo el grupo de turistas.

The truck was quickly approaching him.

Le acercaba rápidamente el camión.

Figurative pairs

Manner Verbs

We carried out the work that was required.

Llevamos a cabo el trabajo requerido.

*I think I will skip class tomorrow.

*Creo que me volaré la clase mañana.

We were thinking we could smooth over our differences.

Pensábamos que podríamos limar nuestras diferencias.

*I stumbled upon some news the other day.

*Me topé con unas noticias el otro día.

He threw her a nasty look.

Le echó una mirada terrible.

Path Verbs

They have passed through this before.

Ya han pasado por esto antes.

*I'm going with the flow.

*Voy con el corriente.

The price of stocks is rising.

Las acciones están subiendo de precio.

*I felt the anger was passing.

*Sentí que se me pasó el coraje.

The plague was spread by rats.

Las ratas propagaron la plaga.

* These sentences were eliminated from analyses because of the use of Mexican dialect in the metaphorical sentences.

APPENDIX B

Sentences Used for Novel/Familiar Photograph Comparisons in Experiment 2

Novel

Manner Verbs

He danced through the menu.

Bailó por el menú.

Every year some students will limp through their exams.

Todos los años hay algunos estudiantes que cojean por los exámenes.

Whenever you want her attention, she's always sliding through the clouds.

Cada vez que quieres su atención, siempre se desliza por las nubes.

I mostly swung between a rockstar and a nerd during my twenties.

La mayor parte de mis veintes columpiaba entre un rockstar y un nerdo.

We wandered through the magazine.

Vagamos por la revista.

Path Verbs

We were circling that movie for hours.

Rodeábamos varias horas alrededor de la película.

I crossed into politics by way of law.
 Cruzé a la política por ruta de la abogacía.
 It was hoped that lowering taxes would advance the economy.
 Se esperaba que bajar impuestos avanzaría la economía.
 While I was waiting for the results, I sank to the floor.
 Mientras esperaba los resultados, me hundí al piso.
 She managed to distance school from home.
 Ella consiguió distanciar la escuela de la casa.

Familiar

Manner Verbs

You are walking a fine line between love and hate.
 Estás trazando una delgada línea entre el amor y el odio.
 * I can't seem to escape this bad mood.
 * No me puedo zafar de este mal humor.
 * He broke up with her yesterday.
 * Él la tronó ayer.
 She dragged me into it.
 Ella me arrastró a eso.
 * The concept hit me like a brick wall.
 * La sola idea me impactó como una pared de ladrillos.

Path Verbs

All that hard work went out the window.
 Todo el trabajo se fue por la ventana.
 I entered into a new stage in life.
 He entrado a una nueva etapa de mi vida.
 He got lost in deep thought.
 Se perdió en sus profundos pensamientos.
 The information went in one ear and went out the other.
 Le entró por un oído y le salió por el otro.
 That policy has yet to be set in motion.
 Todavía tiene que ponerse en marcha la iniciativa de ley.
 * These sentences were eliminated from analyses due to Mexican dialect in familiar metaphors

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Chapter 79

CULTURE IN EMBODIMENT: EVIDENCE FROM CONCEPTUAL METAPHORS/METONYMIES OF ANGER IN AKAN AND ENGLISH

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ABSTRACT

This paper compares and contrasts the metaphoric/metonymic conceptualisations of ANGER in English and Akan, a West African, Kwa, language within the general framework of conceptual metaphor theory (CMT). Studies on cross-cultural conceptual metaphors/metonymies in the cognitive linguistic tradition, particularly, those that concern emotion concepts, reveal both similarities and variation. The cultural embodied prototype theory (Kövecses 2000, 2005; Maalej 1999, 2004) explains this phenomenon by positing the cultural embodiment hypothesis. The paper particularly focuses on the language-specific construals or elaborations of shared conceptual metaphors of ANGER in the two languages to argue in support of the cultural embodiment hypothesis, namely that embodied cognition (as is reflected in the metaphorical/metonymic conceptualisations of emotions) is based on both universal human experience and culture-specific experience. The linguistic evidence in this paper suggests that universal human embodied cognition works only at the generic/highly schematic level of conceptualisation. However, they are given language-specific elaborations or construals that are grounded in cultural salience (cultural embodiment). Using both primary and secondary data, this paper contributes to the universality versus language-specificity of emotion conceptualisation debate by bringing evidence from a less known language/culture.

Keywords: conceptual metaphor/metonymy, emotions, variation, cultural embodiment, cultural salience

ABBREVIATIONS

Compl - Completive Aspect
 Det. - Determiner
 Nom. - Nominal Marker/Morpheme
 Neg. - Negative Marker/Morpheme
 Prog. - Progressive Marker
 Plu. - Plural marker
 Rel. - Relative Marker
 Redup - Reduplicated form/reduplication
 1SG - First person singular pronoun
 2SG - Second person singular pronoun
 3SG - Third person singular pronoun
 1PL - First person plural pronoun
 2PL - Second person plural pronoun
 3PL - Third person plural pronoun

1. INTRODUCTION

The question of whether the conceptualisations of human emotions are universal across cultures or language/culture-specific has been a matter of research interest in cognitive linguistics and social anthropology (Lakoff and Johnson 1980; Lakoff 1987; Lutz 1988; Kövecses 2000, 2005; Maleej 2004). Several views and positions that have been expressed in this regard centred around two main competing arguments. The first argument is that the conceptualisations of basic human emotions, e.g., ‘anger’ and ‘love’ are universal, i.e., the same across cultures because they are grounded in universal human experience (embodied cognition). The second line of argument in this debate holds that the conceptualisations of emotions are culture-specific because they are socio-culturally constructed. Based on more recent findings from cross-cultural studies on the conceptualisations of basic human emotions, however, there is a third emerging argument, the cultural embodied prototype hypothesis (Kövecses 2005; Maalej, 2004), which takes the middle position that the conceptualisation of human emotions across cultures may be universal and culture-specific at the same time. Its proponents explain how this is possible by suggesting an extended view of the embodied cognition thesis, i.e., the cultural embodied cognition thesis (Kövecses 2005; Maalej, 2004).

The paper examines the influence of culture in the metaphorical/metonymic conceptualisations of anger, a primary emotion, in Akan and English. It focuses particularly on the differences and/or similarities in the language-specific realisations/elaborations of shared conceptual metaphors/metonymies of anger in the two languages. The analysis of the language-specific realisations of the metaphoric/metonymic conceptualisations of anger in the two languages reveals both similarities and differences. Consequently, in line with the cultural embodied cognition thesis, the paper concludes that while the similarities in the language-specific elaborations in the two languages may be attributed to universal embodied cognition from which general metaphorical principles derive, the differences in language-

specific construals/elaborations may be explained in terms of cultural filtering. In other words, whereas the shared conceptualisations may reflect general universal human experiences, the language-specific construals/elaborations may reflect experiences that are more salient to a particular socio-cultural group. As Lutz (1988) has argued, universal embodiment may be overridden by cultural factors.

Although evidence for the various debates has come from many different languages and cultures, only a couple of such evidence has come from African languages and cultures (Taylor and Mbense 1998). This paper, therefore, comes as a contribution to the universality versus culture-specificity debate by bringing evidence from another less known language/culture.

2. CONCEPTUALISING EMOTIONS ACROSS CULTURES: THE UNIVERSAL VS CULTURE-SPECIFIC DEBATE

The existence of major similarities and variations in the conceptualisations of basic emotion concepts within and between cultures has been documented extensively in cognitive linguistic research and social anthropology (Breugelmans et al. 2005; King 1989; Kövecses 2000, 2005; Lutz 1988; Taylor and Mbense 1998; Yu 1995). Often discussed in terms of conceptual metaphors, the similarities of conceptualisation of emotion concepts across cultures have been explained in terms of the embodied cognition thesis. First introduced by Lakoff and Johnson (1980) in what has become known as the standard view, it was proposed that conceptual metaphors in general are based on human embodied cognition, i.e., how the human body and brain function in relation to their environment. Subsequently, universal human experiences, including human emotions, produce universal conceptual metaphors. The embodied cognition thesis became the basis for the prototype view which regards emotion concepts as structured scripts, scenarios or cognitive models.

The experientialists within the prototype view (e.g., Lakoff 1987) subscribe fully to the embodied cognition thesis and posit that emotion concepts that have prototypical emotion scripts, and therefore their conceptualisations are largely universal, i.e., are likely to be the same or near universal across languages and cultures because such conceptualisations are based largely on universal human experiences, e.g., getting angry and a rise in bodily temperature. However, the social constructionists within this view, while agreeing with the notion that emotion concepts are scripts/scenarios, disagree with the experientialists' claim that the conceptualisations of such scripts are the same across cultures.

The social constructionists argue that emotion concepts are socio-cultural scripts/scenarios or constructs whose properties depend on particular aspects of a given culture. Consequently, different cultures are likely to have different conceptualisations for the same emotion concepts because different cultures give concepts different socio-cultural salience.

The embodied cultural prototype view (Kövecses 2000, 2005; Maleej 2004) synthesises the two diverging prototype views and proposes that the conceptualisation of emotion scripts across cultures is based on both universal human embodied experiences and more specific socio-cultural constructions. These theorists argue that while social constructions have a bodily basis, bodily motivations have a socio-cultural salience, i.e., the general

conceptualisation of basic human emotion concepts may be grounded in universal human experiences. However, different cultures appear to attach different cultural salience to such experiences which reflects in specific realisations, elaborations or construals of these near-universal conceptualisations.

According to Kövecses (2000, 2005), these similarities and variations in the cross-cultural conceptualisation of emotions occur in two major areas: (1) the source domains in terms of which a particular target concept is understood, and (2) the elaborations in the conceptual correspondences of shared conceptual metaphors. This paper focuses on the latter.

3. METHODS

The paper adopts conceptual metaphor theory (CMT) framework of metaphor analysis (Lakoff and Johnson 1080; Lakoff 1987; Kövecses 2000, 2002). First proposed by Lakoff and Johnson (1980), CMT claims that ‘the generalizations governing metaphorical language are not in language, but in thought: they are general mappings across conceptual domains’ (Lakoff 1993:1). In other words, CMT posits that metaphor is primarily a conceptual phenomenon and only derivatively linguistic. In CMT, metaphor is generally defined as using the knowledge structure of a more concrete domain of experience (source domain) to understand a less concrete, more abstract one (target domain).

Under the assumption that language is a window onto cognition (i.e., linguistic expressions in part reflect cognitive processes and structures), CMT further proposes that linguistic metaphors which are instantiations of conceptual metaphors are a good evidence of what our conceptual system looks like. Consequently, CMT researchers systematically infer conceptual representations and organisation from linguistic expressions that are metaphorically understood by positing conceptual mappings between two conceptual domains, a source domain and a target domain. For example, based on the metaphorical expressions (in italics) about social organisation in English in examples 1a-e below, Kövecses (2002) suggests that the knowledge structure of PLANTS is used to understand SOCIAL ORGANISATIONS in English. He postulates the following conceptual correspondences as licensing the linguistic metaphors in 1a-e:

Table 1. Conceptual correspondences for the SOCIAL ORGANISATIONS ARE PLANTS metaphor

Source: Plant		Target: Social organization
The whole plant	⇒	the entire organization
A part of the plant	⇒	a part of the organization
Growth of the plant	⇒	development of the organization
Removing a part of the plant	⇒	reducing the organization
The root of the plant	⇒	the origin of the organization
The flowering	⇒	the best stage, the most successful stage
The fruit or crops	⇒	the beneficial consequences

(1) SOCIAL ORGANISATIONS ARE PLANTS

- (a) *He works for the local branch of the bank.*
- (b) *Our company is growing.*
- (c) *They had to prune the workforce.*
- (d) *The organization was rooted in the old church.*
- (e) *His business blossomed (Kövecses (2002: 8)).*

In this paper, two sets of linguistic data, (native English data and native Akan data) were analysed. The English data were collated from secondary sources, i.e., based on previously analysed conceptual metaphors in English (Esenova 2009; Kövecses 2000, 2005; Lakoff 1987). However, the Akan data were primary data, elicited through focus group discussions. Relatively monolingual¹ native speakers of Akan in rural and semi-rural Ghana participated in focus group discussions to generate linguistic expressions that are conventionally used to talk about anger in Akan and from which conceptual metaphors of anger in Akan were extracted for analysis. A short video that aimed to depict and evoke anger (and fear)² was used as a stimulus for the elicitation. Each focus group was constituted by between 6-8 participants and each discussion lasted for approximately 12 minutes. In all a total of approximately 120 minutes of discussions were audio recorded and later transcribed for analysis.

In identifying linguistic metaphors, I adopted the MIP approach. In formulating conceptual metaphors, while the model provided in the literature was a helpful guide, I opted a bottom-up approach, i.e., I stayed as close as possible to the actual words/phrases in the data. I also relied on the broader context of the elicitation in interpreting a particular metaphorical expression and in establishing metaphorical connections between two conceptual domains. The patterns that emerged from the data were captured in terms of a formulation of hypotheses about cross-domain mappings. These formulated hypotheses I refer to as conceptual metaphors (presented in small caps in line with conceptual metaphor theory tradition). In the discussion of my examples, I maintain the original Akan metaphorical expressions and then provide three levels of translation for them, namely, an interlinear glossing, a literal translation and an English translation equivalent where possible.

4. CONCEPTUAL METAPHORS AND EMOTION CONCEPTS

Recent research in cognitive science has paid particular attention to the study of emotion concepts, particularly the language of emotion concepts (Kövecses 1990, 2000, 2005) although in the past emotions were traditionally regarded in psychology as extras not as serious mental functions like perception, language, thinking and learning’.

¹ Ghana is a highly multilingual country (ethnologue (2009) records 79 indigenous languages plus English and other West African trade/border languages, e.g. French and Hausa). Nevertheless, Akan enjoys a high level of language vitality; about 50% of Ghana’s population are native Akan speakers and about 44% of the population speaking it as a second or vehicular language. Consequently, many native Akan speakers especially in rural native Akan speaking communities are largely monolingual even though they may know a word or two from other languages.

² The original study from which this paper is taken discussed the metaphorical/metonymic conceptualisation of anger and fear among three groups of people: native English speakers, native Akan speakers and Akan-English bilingual speakers in Ghana.

In semantics, emotion concepts were considered as consisting of feelings only and devoid of conceptual content (Lakoff 1987). However, current researchers recognise the important contribution findings from the study of emotion concepts can make to research on cognition. Similarly, Lakoff (1987:380) submits that ‘emotions have an extremely complex structure, which gives rise to a wide variety of non-trivial inferences’.

Cognitive linguistic research on emotion concepts, especially in the conceptual metaphor theory (CMT) tradition, has focused largely on the conceptual structure of such concepts as well as the language used to describe them within and across cultures. Thus, CMT researchers investigate the conceptualisation of emotion concepts by inferring the conceptual structures of the concepts from a careful study and analysis of the metaphorical expressions that are used to talk about them. While the study of emotion concepts and the language of emotion concepts has been studied extensively in English, Dzokoto and Okazaki (2006) is the most frequently cited study of the language of emotion in Akan.

5. METAPHORS OF ANGER IN ENGLISH

The study of the conceptual structure of anger as an emotion concept has received a lot of research attention in cognitive linguistics following the pioneering works of Lakoff (1987), Lakoff and Kövecses (1987) and Kövecses (1990) on ANGER in American English.

These studies have been replicated in several other languages including Chinese (Yu 1995), Zulu (Taylor and Mbense 1998), Spanish (Soriano 2003) and Tunis-Arabic (Maalej 1999, 2004). Different but complementary methodological approaches, including the CMT approach (Lakoff 1987, Lakoff; Kövecses 1987, Kövecses 1990, 2002), corpus linguistics approaches (Esenova 2009), and discourse approaches (Lutz 1988), have been employed in these studies. Consequently, I rely on previously analysed data and present a brief overview of the conventional conceptual metaphors/metonymies of anger in English particularly as discussed in Esenova (2009), Lakoff (1987) and Kövecses (2002).

Lakoff (1987), Lakoff and Kövecses (1987) and Kövecses (2002) have proposed that the conceptual structure of ANGER in English consists of a system of conceptual metaphors that derive from general metonymic and metaphoric principles. First of all, they postulate that the metonymic conceptualisations of ANGER in English are motivated by the folk understandings of the physiological effects of anger on the angry person in English.

The central metonymic principle underlying such conceptualisations is: THE PHYSIOLOGICAL EFFECTS OF AN EMOTION STAND FOR THE EMOTION. Based on this central metonymy, Lakoff (1987) postulates the following system of metonymies of anger in English:

BODY HEAT IS ANGER: He is a *hothead*.

INTERNAL PRESSURE IS ANGER: He almost *burst a blood vessel*.

(COLOUR OF SKIN) REDNESS IN FACE AND NECK AREA IS ANGER: He *got red with anger*.

PHYSICAL AGITATION IS ANGER: He's *all worked up*.

INTERFERENCE WITH ACCURATE PERCEPTION IS ANGER: She *was blind with rage*.

In the literature, linguistic metaphors/metonymies or metaphorical expressions that are conventionally used to talk about ANGER in English have been systematically pointed to the following conventional conceptual metaphors:

(2) ANGER IS A HOT FLUID IN A CONTAINER:

- (a) *She's a real hothead*³.
- (b) *You make my blood boil.*
- (c) *Let her stew.*
- (d) *I got all steamed up.*
- (e) *He's just blowing off steam.*
- (f) *I had reached the boiling point.*
- (g) *He boiled over.*
- (h) *She felt her gorge rising.*
- (i) *Simmer down!* (Kövecses 2002:96)

(3) ANGRY PERSON IS A PRESSURISED CONTAINER

- (a) *He exploded.*
- (b) *I blew a gasket.*
- (c) *He was fuming.*
- (d) *I could barely keep it in anymore.*
- (e) *He managed to keep his anger bottled up inside him.*
- (f) *He suppressed his anger.*
- (g) *He let out his anger* (Kövecses 2005:39).

(4) ANGER IS FIRE⁴

- (a) *Those were inflammatory remarks.*
- (b) *She was doing a slow burn.*
- (c) *He was breathing fire.*
- (d) *Your insincere apology just added fuel to the fire.*
- (e) *After the argument, Dave was smoldering for days.*
- (f) *Boy, am I burned up.*
- (g) *He was consumed by his anger* (Lakoff 1987:388).

(5) ANGER IS INSANITY⁵

- (a) *I just touched him, and he went crazy.*
- (b) *You're driving me nuts!*
- (c) *One more complaint and I'll go berserk.*
- (d) *He got so angry he went out of his mind.*
- (e) *She went into an insane rage.*

³ Hothead is an example of the interaction between metaphor and metonymy in the conceptualisation of ANGER in English.

⁴ Lakoff (1987) suggests that this metaphor derives from combining aspects of the BODY IS A CONTAINER FOR THE EMOTIONS metaphor, the metonymic conceptualisation of anger in terms of REDNESS IN THE FACE AND NECK AREA and the metaphonymy ANGER IS HEAT (when heat is applied to solids).

⁵ Interestingly, what looks like the most frequently used linguistic instantiation of this metaphor, *to be mad*, e.g. *I am mad at you*, in American English was absent from Lakoff's list above.

- (f) *If anything else goes wrong, I'll get hysterical.*
 (g) *He's fit to be tied.*
 (h) *He's about to throw a tantrum (Lakoff 1987:390).*

(6) **ANGER IS AN OPPONENT (IN A STRUGGLE)⁶**

- (a) *I'm struggling with my anger.*
 (b) *He was battling his anger.*
 (c) *She fought back her anger.*
 (d) *You need to subdue your anger.*
 (e) *I've been wrestling with my anger all day.*
 (f) *I was seized by anger.*
 (g) *He lost control over his anger.*
 (h) *Anger took control of him.*
 (i) *He surrendered to his anger.*
 (j) *He was overcome by anger (Lakoff 1987:391).*

(7) **ANGER IS A DANGEROUS ANIMAL⁷:**

- (a) *He has a monstrous anger.*
 (b) *He has a fierce temper.*
 (c) *He has a ferocious temper.*
 (d) *He unleashed his anger.*
 (e) *His anger is insatiable (Lakoff 1987:392-3).*

Table 2. Conceptual correspondences licensing the ANGER IS A DANGEROUS ANIMAL metaphor

Source: dangerous Animal		Target: Anger
The animal getting loose	⇒	loss of control of anger
The owner of the dangerous animal	⇒	the angry person
Energy needed to control a dangerous animal	⇒	energy needed to control anger

The mappings in this metaphor appear to be based on source domain entailments only rather than source domain lexis. In other words, while the metaphorically used words may implicitly suggest references to some animal behaviour or feature, they are not typical lexis of the source domain; they may be applicable to other source domains, e.g., *insatiable* may be applicable to a person.

⁶ This metaphor is believed to be motivated by the general understanding of the difficulty involved in the angry person controlling the undesirable reactions anger produces, i.e. the effort one needs to control the negative/undesirable reactions anger produces is metaphorically understood in terms of the effort one needs to engage in a struggle with an opponent.

⁷ Lakoff (1987:392-3) suggests that this metaphor is motivated by the perceived potential danger of anger in relation to other people around the angry person which is said to be conceptualised in terms of 'a sleeping animal that is dangerous to awaken, something that can grow and become dangerous, as something that has to be held back, and as something with a dangerous appetite'. He proposes the conceptual correspondences in table 2 above as licensing the linguistic metaphors in example (7) above:

However, it is interesting to note that insatiable people are often perceived as greedy people and greedy people are often perceived as some kind of animal. For instance, in English, a greedy or gluttonous person is referred to as a *pig*.

Nevertheless, the linguistic expressions that have been postulated as instantiations of this metaphor may refer to entities other than an animal.

This is an example of instances where some claims in conceptual metaphor theory, particularly, the up-down approach to the formulation of conceptual metaphors appear problematic.

(8) *ANGER IS A HORSE*⁸

- (a) *His common sense is a bridle to his quick temper.*
- (b) *I usually manage to curb my anger when I am at home, but at work I often don't succeed.*
- (c) *However, it will pay you to curb your famous temper.*
- (d) *Scipio bridled his indignation.*
- (e) *Burun was unable to rein in his temper (Esenova 2009: 4.2).*

(9) *ANGER IS A PLANT*

- (a) *After this, depression sets in and deep seated anger can take root.*
- (b) *The feeling of rejection had quickly blossomed into anger.*
- (c) *Divorce is too often the bitter fruit of anger.*
- (d) *Anger is rooted in our survival instincts and has a legitimate and vital function in human behavior (Esenova 2009:4.2).*

(10) *ANGER IS A BURDEN*

- (a) *Unburdening himself of his anger gave him a sense of relief.*
- (b) *He carries his anger around with him.*
- (c) *After I lost my anger, I felt lighter.*
- (d) *He has a chip in his shoulder.*
- (e) *You'll feel better if you get it off your chest (Lakoff 1987:396).*

(11) *ANGER IS A STORM*

- (a) *It was a stormy meeting.*
He stormed out of the meeting.

(12) *ANGER IS A CHILD*

- (a) *Say, shall we nurse the rage?*
- (b) *Instead he decided to nurse his anger.*
- (c) *He nurtured that anger for a decade.*
- (d) *Fostering anger over a long enough time can lead to violence.*
- (e) *Anger begets anger, which leads to conflicts (Esenova 2009: 4.2).*

⁸ This may be regarded as a more specific realization of the *ANGER IS A DANGEROUS ANIMAL* metaphor.

Based on evidence of conventional linguistic metaphors of anger that are believed to instantiate underlying metaphorical conceptualisations, it has been suggested that the prototypical ANGER scenario in English has five stages:

- Stage 1: Offending event
 - Stage 2: Anger exists
 - Stage 3: Attempt to control anger
 - Stage 4: Loss of control (anger controls)
 - Stage 5: Retribution (angry behaviour)
- (Holland and Quinn 1987: 214).

6. METAPHORS OF ANGER IN AKAN

Studies on emotion concepts in Akan in general are scanty. Except for Dzokoto and Okazaki (2006), who have examined (in part) the folk emotion lexicon in Fante, a major dialect of Akan, I do not know any research on this topic in Akan. With specific regards to anger, the only known works in the cognitive tradition are Ansah (2008, 2011).

The concept of ANGER appears deeply entrenched in Akan. It is lexicalised as *Abufu/abufuw/abufuo*⁹ in the language. The word *abufuw* is multimorphemic, consisting of the following morphemes: *a-* (a nominal marker) *bo*¹⁰ - (chest), *fuw* (to grow weed)¹¹. Even before I introduced the word *abufuw* in the focus group discussions, the participants used it frequently to either denote anger or describe angry situations.

Like English, the conceptualisations of anger in Akan are motivated by both general metonymic and metaphorical principles. For example, it is clear from the context that the phrases that contain the word *abufuw* denote the concept of anger or describe angry situations are metaphorical, denoting anger rather than the literal or more basic meaning of a chest growing weed. Indeed, there would be a semantic clash if their more basic meanings were assumed. However, we can understand the development of anger or the process of getting angry in Akan metaphorically in terms of the process of weed growing. I discuss the Akan conceptualisation of anger in terms of growing weed in detail later. Another source of evidence of metaphorisation in the conceptualisations of anger in Akan is found in the use of the human body container schema in the lexicalised form of the concept of anger in Akan - where the chest is a container for anger.

Secondly, like English, there is a system of conceptual metonymies of anger in Akan where the folk understandings of the physiological effects of anger in Akan stand for anger:

⁹ These are the phonetic realisations in the three major dialects, Fante, Akuapem and Asante respectively. In this study, I shall stick to the unified Akan orthographic form, *abufuw*.

¹⁰ The vowel change is due to +ATR assimilation or harmonisation.

¹¹ Even though this verb is applicable to other instances of growth, e.g. hair growth, I would like to argue that to grow weed is a more basic sense, and to grow hair a metaphorical extension of this sense. For instance, overly grown hair is described in terms of a forest in Akan. In addition, for *fuw* to apply to hair growth on the chest, it will require the use of the adposition *so* 'on' after *bo* 'chest'. For example, *ne bo so afuw* 'his/her chest is hairy'. Finally, *fuw* does not apply in other instances of growth such as the growth of a human being or non-weed plants. The verb that designates this kind of general growth is *nyin(i)*.

BODY HEAT IS ANGER: ne bo rehye ‘his/her chest is *burning*’; ne bo rehuru so ‘his/her chest is *boiling over*’ (he/she is boiling with anger).

INTERNAL PRESSURE IS ANGER: ɔrepae ‘he/she is *splitting open*’ (he/she is bursting with anger).

BODY PART STANDS FOR ANGER: ne bo fuw ‘his/her *chest* grows weed’; n’atiko apae ‘the *back of his/her head* has split open’.

However, unlike in English, there is no linguistic evidence to suggest that any of the conceptual metonymies of anger in Akan are motivated by the physiological effects of anger relating to a change in skin colour (redness) around the neck and face area. Thus, we may suggest that conceptualisations of anger in Akan are equally constituted by a system of conceptual metaphors that are based on general metonymic and metaphorical principles.

Based on a range of conventional metaphorical expressions used by the native Akan participants to describe different aspects of anger, the following conventional conceptual metaphors of the emotion in Akan were inferred. Here I provide the conceptual correspondences (in a table form) that license the various linguistic metaphors.

Table 3. Conceptual correspondences for ANGER IS A GROWING WEED metaphor

Source: A growing weed		Target: Anger
Weed	⇒	Anger
The process of the weed growing	⇒	the process of getting angry
The place for growing weed	⇒	the angry person’s body/chest
What causes the weed to grow	⇒	what causes the anger
Frequency of weed growth	⇒	frequency of occurrence of anger

(13) ANGER IS GROWING WEED:

(a) Me-bo a-fuw.

Me-chest COMPL- grow weed.

My chest is has grown weed/ is bushy.

I am angry.

(b) Ne bo n-kyere fuw.

3SG chest Neg-long grow weed.

His/her chest does not take long to grow weed.

He/she is quick tempered.

(c) Ne bo fuw ntem-ntem.

3SG chest grow weed quick-redup.

His/her chest grows weed quickly.

He/she is quick tempered.

It may be argued that the ANGER IS A GROWING WEED metaphor constitutes what Semino (2010:2) calls an unrealistic scenario, i.e., implausible, counterintuitive, absurd, or impossible scenario – a scenario which does not reflect what people already know about the source domain. Typically, weeds do not grow on chests. However, contrary to Semino's examples where the metaphors that evoked these unrealistic scenarios were on-line constructions or creative metaphors, the ANGER IS A GROWING WEED metaphor is highly conventional in Akan, perhaps the most conventionalised metaphorical conceptualisation of anger in Akan.

Table 4. The conceptual mappings I propose for the ANGER IS A HOT FLUID IN A CONTAINER metaphor

<i>Source: Hot fluid in a container</i>		<i>Target: Anger</i>
The physical container	⇒	the angry person's body
The hot fluid inside the container	⇒	the anger
The degree of fluid heat	⇒	the intensity of anger
The cause of increase in fluid heat	⇒	the cause of anger

(14) ANGER IS A HOT FLUID IN A CONATINER

(a) Ne bo re huru so.

Poss-chest prog.boil over

His/her chest is boiling over.

He/she is boiling with anger.

(b) Ne bo n-nwo ne ho.

Poss-chest neg-cool poss. self

His/her chest does not cool itself/himself/herself.

He/she is angry.

(c) ɔ-wɔ a-bu-fuw hyew.

3SG-possess nom-chest-weedy hot.

He/she has a hot, weedy chest.

He is hot tempered.

(d) Nebo n-now-e. ‘

Poss chest neg-cool-past

His/her chest has not cooled down.

He/she is not appeased.

Like English, Akan also makes use of some entailment potentials of the body container source domain to elaborate the ANGER IS A HOT FLUID IN A CONTAINER metaphor. For instance, the general knowledge that intense heat causes a rise in volume or upward movement of a fluid in a container corresponds to the increase in the intensity of anger in Akan where the entire container rather than the hot fluid in it moves upward, e.g., *n'akoma a-sɔre* 'his/her heart has risen'; *n'akoma kɔ soro* 'his/her heart has gone up'; *nebo rehuru* 'his chest is boiling'. Another carryover knowledge from the source domain that produces metaphorical entailments in the Akan mapping is that too much heat can cause the container

to explode and that when the container explodes, what was inside it comes out, e.g., *w'adwa* 'he has split open'; *ɔrepae* 'he/she is bursting/breaking'.

However, while some elaborations of the English mapping are based on the entailment potential 'hot fluid produces steam in the container', e.g., *He's just letting off steam*; there is no linguistic evidence of such elaborations in Akan. Again, there is linguistic evidence to show that the entailment that in the case of an explosion parts of the container go up in the air, and what was inside the container comes out. However, there is no linguistic evidence to suggest that parts of the Akan body container go up in the air in the case of explosion even though there are some linguistic elaborations based on the entailment that in an explosion what was inside the container comes out as shown in the following example from the focus group discussions:

(15)

(a) *Mebofu a mentumi nyɛ hwee, enti sɛ me ne nipa no ko a na abufuo no afiri me mu.*

When I get angry I can't do anything so if I fight the person, then the anger gets out of me.

Indeed, the conceptualisation of ANGER AS A HOT FLUID IN A CONTAINER is consistent with the conceptualisation of *abotare* 'patience', an emotion concept in Akan that stands in direct opposition to anger, as A COLD FLUID IN A CONTAINER. Lakoff (1987) has suggested that in the ANGER IS A HOT FLUID IN A CONTAINER metaphor, when there is no heat, the fluid is cool and calm and that this coolness and calmness corresponds to lack of anger in the central metaphonymy ANGER IS HEAT. For example, while hot fluids have the tendency to rise in volume and get out of their containers, cool or cooled substances have the tendency or propensity to settle or remain securely in their containers, contrasting with the hot fluids causing a rise in volume entailment in the ANGER IS A HOT FLUID IN A CONTAINER metaphor. Thus, *abotare* 'patience' (the process of a chest sticking to) is conceptualised as A COOL/COLD FLUID IN A CONTAINER in Akan. As the concept that most closely contrasts *abufuw* 'anger' in Akan, the metaphorical conceptualisation of *abotare* 'patience' is consistent with the metaphorical conceptualisation of anger in the language.

(16) PATIENCE IS A COLD FLUID IN A CONTAINER

(a) *Me-bo a-dwo.*

Me-chest COMPL-cooled down

My chest has cooled down.

I am not angry any more.

(b) *Me-bo a-tɔ me-yam.*

Poss-chest COMPL-fall poss-stomach

My chest has fallen into my stomach.

I am appeased.

(c) *N'-akoma a-tɔ ne-yam.*

Poss-heart COMPL-fall poss-stomach

His/her heart has fallen into his/her stomach.

He/she has calmed down.

The linguistic data revealed what may be classified as the two prototypical models of anger in Akan:

Model 1:

Stage 1: Offending event

Stage 2: Anger exists

Stage 3: Control

Model 2:¹²

Stage 1: Offending event

Stage 2: Anger exists

Stage 3: Retribution

For instance, on the question of how participants react, in terms of what they typically do to people who make them angry and what they gain from doing such things, two main responses emerged: (1) refraining from taking action against the offending people and (2) taking action against the offending people. Even though participants in both categories described anger as a negative and potentially dangerous emotion, each group identified different entities as the target of the potential danger of anger. On the one hand, the participants who refrain from taking any action argued that anger is dangerous to people other than the angry person. Subsequently, any action that is taken in anger could be dangerous not only to the source of the anger, the offending party but also other people around. Therefore, anger must be *tamed*, *controlled* and *not let loose*. For such speakers of Akan therefore, anger is a dangerous thing that must be controlled.

Table 5. My proposed conceptual mappings for the Akan version of the ANGER IS A DANGEROUS ANIMAL metaphor

<i>Source: Dangerous thing</i>		<i>Target: Anger</i>
The thing being let loose	⇒	loss of control of anger
The owner of the dangerous thing	⇒	the angry person
Energy needed to control a dangerous thing	⇒	energy needed to control anger

(17) ANGER IS A DANGEROUS THING

(a) *Sɛ mebo fuw a meyɛ dinn efiri sɛ ɛwɔ sɛ wotumi kontro¹³/hyɛ abufuw no so.*

When I get angry I keep quiet because one has to be able to control the anger.

I keep calm when I am angry in order to control the anger.

On the other hand, the second group of native Akan participants identified the angry person as the target of the potential danger of the emotion of anger, i.e., that unexpressed anger is dangerous to the angry person's body and mind. For such speakers of Akan, anger is

¹² This model may explain why anger is not metaphorically conceptualised as AN OPPONENT IN A STRUGGLE in native Akan.

¹³ This participant actually used the Akan version of the English word 'control' as well as the Akan equivalent of that word *hyɛ so* 'suppress'. This is an example of lexical borrowing in Akan.

conceptualised either as a burden (for the angry person who has to control (bear) it) or a disease that has to be released or removed from the angry person's body container in one way or another in order to restore the body container to its normal condition.

Table 6. Mappings for the Akan version of ANGER IS A BURDEN

Source: Burden		Target: Anger
The burden bearer	⇒	the angry person
The burden	⇒	Anger
Carrying the burden	⇒	keeping/suppressing the anger
Offloading the burden/unburdening	⇒	expressing anger

(18) ANGER IS A BURDEN

(a) *Mebofu a na aye se biribi hye me so; mentumi nye frii*

When I get angry it is like something is weighing me down; I can't be free.

(b) *Obi hye me abufu a meka foo kyere no na deɛ ehye me so no afiri me mu.*

When someone makes me angry I say nasty things to them to let that which weighs me down get out of me.

(c) *Se obi hye me abufuo a mene no ko; mene no ko wie a na abufuo no afiri me mu.*

When someone makes me angry I fight them. When I fight them the anger leaves me.

(d) *Mebofu a mekasa-kasa se nye saa a m'akoma nto me yam.*

When I am angry I talk repeatedly if not my heart won't fall into my stomach.

When I get angry I vent my anger verbally in order to be appeased.

(e) *Me bofu a na aye se biribi hye me so; mentumi nye frii¹⁴*

When I get angry it is like something is weighing me down; I can't be free.

(19) ANGER IS A DISEASE

(a) *Obi ye na mebofu a, metumi a mebo no na meho atɔ me.*

If someone makes me angry, if I can I beat them up and recover.

(b) *Se obi hye me abufuw na medidi n'atem a na meho atɔ me.*

When someone makes me angry and I insult the person I recover

Table 7. Mappings for the Akan version of ANGER IS A DISEASE

Source: Disease		Target: Anger
Disease causing agent	⇒	the cause of anger
The disease	⇒	Anger
Curing the disease	⇒	expressing anger
Recovering from disease	⇒	relief from anger

While the Akan conceptualisation of the potential danger of anger in relation to the angry person is akin to the retribution stage of the prototypical anger scenario in English, it is

¹⁴ This is another instance of borrowing from English 'free'.

important to mention that stages 3 and 4 of the prototypical anger scenario in English may be of no consequences at all in what appears to be the prototypical anger scenarios in Akan.

(20) *ANGER IS FOOD*¹⁵

(a) *Asem no a-mee*¹⁶ *me*

Matter DET COMPL-full up me

I am full up with the matter.

I am fed up/I am angry.

(b) *Asem no me-e no boro- o so.*

Matter Det. Full- past 3SG more- past on.

The matter made him (the man in the video) overly full up.

The man was fed up with the matter (the woman's behaviour).

(c) *Me mene m'abufuw nyinaa nam' ano ankɔpa.*

ISG swallow Poss-anger all CONJ. Poss mouth neg. go slip.

I swallow all my anger so my mouth does not slip (i.e., do not say the wrong things).

Table 8. Mappings for the Akan version of ANGER IS FOOD

Source: Food		Target: Anger
Food /matter	⇒	Anger
Swallowing food	⇒	controlling anger
Taste of the food	⇒	the cause of anger

7. DIFFERENCES AND/OR SIMILARITIES BETWEEN ENGLISH AND AKAN CONCEPTUALISATIONS OF ANGER

The analyses above have pointed to both similarities and differences with regards to source domains in the conceptualisations of anger in Akan and English. First of all, both English and Akan speakers make use of general metonymic and metaphoric principles in their conceptualisations of anger. The two languages shared the following generic-level conceptual metonymies/metaphors from which more specific metonymies/metaphors of anger were derived: BODY HEAT STANDS FOR ANGER, THE HUMAN BODY IS A CONTAINER FOR THE EMOTIONS and EMOTION IS A GROWING THING. Indeed, the HUAMN BODY AS A CONTAINER was a key source domain for both metonymic and metaphorical conceptualisations of anger in both languages.

For instance, the physiological effects of anger on the body are used metonymically in both languages to stand for the emotion, e.g., BODY HEAT IS ANGER, INTERNAL PRESSURE IS ANGER etc. Nevertheless, not all the physiological effects identified in English were also used in Akan. For example, whereas agitation and skin colour (redness

¹⁵ Among the participants who considered anger as dangerous to other people, controlling anger was described in terms of the Akan word mene 'to swallow'.

¹⁶ While the translation equivalent may not exactly express anger in English, in the context, the Akan expression denotes implicit anger.

around the face and neck area) are used metonymically to conceptualise anger in English, these physiological effects of anger are not used in the conceptualisation of the emotion in Akan. Other source domains shared between the two languages are: A BURDEN and A HOT FLUID IN A CONTAINER. Nevertheless, there were source domains that were exclusive to each language: A NATURAL FORCE, AN OPPONENT IN A STRUGGLE, INSANITY, FIRE and A CHILD (English) and A DISEASE and FOOD (Akan).

As the literature suggests, variation in the conceptualisation of emotions across languages/cultures may show in how each language/culture actually construes the shared source domains. For example, Kövecses (2000) reports that American English and Chinese share a common source domain SPORT in their metaphoric understanding of POLITICS. However, SPORT is specifically construed as *American football* and *baseball* in American English, on the one hand and as *table tennis*, *volleyball* or *soccer* in Chinese on the other hand. In other words, what is shared between these two languages/cultures appears to be fairly abstract; the language-specific understandings or construals are based on cultural salience, i.e., the popularity of a particular sport in the given culture.

Although the human body is conceptualised as a container for anger in Akan and English, there are differences in the specific body parts that are conceptualised as containing anger in each language. In English anger may be contained in the ‘eyes’, ‘face’, ‘neck’, ‘chest’, ‘guts’, ‘nerves’ and ‘blood’. However, in Akan, anger is metaphorically contained in the ‘chest’, ‘heart’, ‘back of the head’, ‘stomach’ or even the whole body. Secondly, the conceptual metaphor ANGER IS A HOT FLUID IN A CONTAINER occurs in both languages. Nevertheless, there are differences in elaborations of shared mappings. For example, in both languages, the hot fluid corresponds to anger. However, in the elaborations, the hot fluid is specified as ‘blood’ in English (*you make my blood boil*) but the fluid is not specified in Akan. In fact, on the surface it may even look like there is no fluid at all in the Akan conceptualisation because no specific fluid is mentioned in the elaboration. The use of a verb like *huru* ‘to boil’ (*ne bo rehuru* so ‘his/her chest is boiling over’, i.e., he/she is angry), in Akan, however, presupposes the presence of some liquid, usually water, even though other liquids may apply.

In addition, the English elaborations of ANGER IS A HOT FLUID IN A CONTAINER metaphor specify the English body container as covered so that when the loss of control over anger is conceptualised as an explosion, the cover of the English body container may go off in the explosion, e.g., I blew my *top*; He blew the *gasket*¹⁷. However, even though the idea of explosion is alluded to in the Akan elaborations of this metaphor (*wadwa/wapae* ‘he/she has split open’, i.e., he/she has exploded) there is no linguistic evidence to suggest that the Akan body container is covered – no body parts go off in the Akan explosion. The ANGER IS A HOT FLUID IN A CONTAINER metaphor is further elaborated in English based on the entailment potential of the source domain that hot fluid produces steam in the container (He is blowing off *steam*). However, the linguistic evidence does not support this elaboration in Akan conceptualisations even though both languages make use of a related entailment, i.e., too much heat causes too much pressure and too much pressure on the container may lead to the container exploding.

¹⁷ This suggests that anger is conceptualised as a MACHINE in English. This conceptualisation of anger in English is not captured in the literature though.

Again, in the metaphorical entailment of both the English and the Akan conceptualisations of anger as this metaphor, lack of heat corresponds to lack of anger. However, there are differences in the specific ways in which this mapping is elaborated in each language. In English, the body container is made to settle down as a whole (*calm* down). In Akan, however, the specific anger-bearing container is made to settle in a more secure container to either prevent the hot fluid or the anger-bearing container from moving upward. For instance, when one's chest is boiling over (*wobo rehu so* 'be angry') or when one's heart goes up (*w'akoma kɔ soro* 'be angry'), the person may be advised to do one of the following: *ka w'akoma to wo yam* 'push your heart into your stomach' or *ma wo bo ntɔ wo yam* 'let your chest fall into your stomach', both meaning calm down/be patient.

Furthermore, both languages generally conceptualise the process of controlling anger in terms of bearing a BURDEN or controlling A DANGEROUS THING (ANIMAL). However, each language construes this process exclusively in terms of different source domains. On the one hand, English specifically conceptualises the process in terms of struggling with an opponent (he was *battling* his anger). On the other hand, Akan conceptualises the process in terms of eating or swallowing something (*mene w'abufuw* 'swallow your anger', i.e., calm down/be patient). In addition, whereas the linguistic evidence suggests strong implicit connections between the DANGEROUS THING and A DANGEROUS ANIMAL (e.g., a horse) in English, there is no linguistic support for such strong connections in Akan. Finally, the conceptual metaphor ANGER IS A GROWING THING occurs in both languages. However, the GROWING THING is specified in English as A PLANT but as a GROWING WEED in Akan.

CONCLUSION

In this paper, I have compared and contrasted the metaphorical/metonymic conceptualisations of anger in Akan and English. I have particularly focused on the language-specific construals or elaborations of shared conceptualisations between the two languages. The analysis shows support for the culture embodied prototype argument that embodied cognition is both universal and culture-specific, i.e., the metaphorical/metonymic conceptualisations of emotions across cultures are motivated by and grounded in both universal human experiences and culture-specific experiences (Kövecses 2002, 2005, Maalej 1999, 2004). In other words, on the one hand, the similarities between the two languages in terms of source domains and sometimes the similar correspondences in the conceptualisations of anger found in this paper may be interpreted in terms of universal embodied cognition, i.e., the general metaphorical principles (e.g., THE BODY AS CONTAINER FOR THE EMOTIONS), and metonymic principles (e.g., PHYSIOLOGICAL EFFECTS OF AN EMOTION STAND FOR THE EMOTION) that are shared by both languages may be argued to be motivated by universal human experience. On the other hand, the differences found here in terms of source domains as well as the specific elaborations/construals of shared conceptualisations may be interpreted as suggesting two possible things: (1) that the emotions are conceptualised differently in the two languages (2) that different aspects of the same generic-level conceptualisations of the emotions are highlighted/hidden in each language.

Proponents of the cultural embodied prototype view explain this phenomenon by proposing two kinds of embodiment: (i) physiological embodiment and (ii) culturally specific

embodiment, also known as non-physiological embodiment. For instance, THE BODY AS A CONTAINER FOR ANGER metaphor which was shared by the two languages may be said to exemplify physiological embodiment while the specific body parts mentioned in the elaborations of this highly schematic conceptualisation, e.g., *blood, eyes, guts* (in English) and *chest, heart, stomach* (in Akan) exemplify culturally specific embodiment. Maalej (2004:173) has argued that in culturally specific embodiment, a particular emotion establishes a conventional cultural correlation between a body part and a certain conceptualisation of an emotion, e.g., the conceptualisation of anger as redness of skin around the neck and face area in English, so that there is a fusion of culture and physiology.

While anger is conceptualised in terms of redness of skin around the neck and face area in English, Hungarian, Chinese etc., such metonymic/metaphorical conceptualisations of anger in terms of changes in skin colour, are not supported by the Akan data or Wolof data (Munro 1991). Going by Maalej's (2004) claims, therefore, we may conclude that the English specific realisation of the general metonymic conceptualisation THE EFFECTS OF AN EMOTION STAND FOR THE EMOTION in terms of REDNESS OF SKIN COLOUR is a matter of cultural salience. For instance, it is easier to see the change of skin colour on light-skinned bodies than it is (if possible at all) to see it on dark-skinned bodies.

Typically, native Akan speakers as well as native Wolof speakers have dark-skinned bodies. However, typical native speakers of English, Hungarian, Chinese etc. have light-skinned bodies. Since it is easier to see any changes in skin colour on lighter-skinned bodies than on darker-skinned bodies, the physiological effects of an emotion (e.g., anger) based on changes in skin colour are likely to be culturally more salient (and therefore get encoded in their metaphorical/metonymic conceptualisations) in light-skinned bodied cultures, e.g., English, and Chinese. However, since such physiological effects appear not to be culturally salient in dark-skinned bodied cultures, any metaphorical/metonymic conceptualisations relating to changes in skin colour are not highlighted and therefore do not get encoded in their metaphorical/metonymic conceptualisations.

This paper has explored the role culture plays in the metaphorical/metonymic conceptualisations of ANGER in two languages/cultures, Akan and English explaining the similarities and differences in these conceptualisations (both in terms of source domains and the language-specific construals and elaborations) in terms of the general assumptions of the cultural embodied prototype theory. The paper concludes that embodied cognition may be grounded as much in socio-cultural salience as in universal human experience. Thus, this is a viable area of research not only for Akan scholars but also for cognitive anthropological researchers. For instance, this paper has focused on one emotion concept only so it would be interesting to find out the kind of results a focus on other concepts would yield.

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Chapter 80

ATTENTIONAL PROFILES OF PARENTHETICAL CONSTRUCTIONS: SOME THOUGHTS ON A COGNITIVE-SEMANTIC ANALYSIS OF WRITTEN LANGUAGE*

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ABSTRACT

This paper's focus are verbal sequences which, in the written modality of alphabetical orthographic systems, are marked off from their linguistic environment by a conventionalized set of figural elements out of a non-alphanumeric representational system (typically, parentheses, dashes, or commas).

As these parenthetical constructions are (even traditionally) associated with some notion of attention, Talmy's (forthcoming) factor model of linguistic attention, informed by a sophisticated theory of language-specific attentional parameters, offers a coherent theoretical and powerful analytical framework that is both sufficiently independent and general to allow for a systematic and encompassive investigation of these constructions' attentional specifics.

Proceeding from Talmy's analysis of parenthetical delivery in the spoken modality, some initial suggestions will be submitted of how to adapt his insights into attention and parentheticality to the particular conditions and specific demands of the written language: Two fundamental attentional mechanisms from a category of causal factors affecting linguistic entities in the context, Backgrounding the target and Targeting a concomitant of a referent, are scrutinized for a systematic analysis of major constructional variants of parenthetical constructions.

Applying this novel and promising approach, it proves sensible to delineate an attentional profile of (the) parenthetical construction(s) based on a(nother) pivotal factor, The generalized form-semantics association.

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Keywords: Leonard Talmy, Talmy's attention system in language, parenthetical construction(s), written modality

1. THE BASIC PERSPECTIVE: ATTENTION AND PARENTHETICITY

For several years now, the major focus of my linguistic study has been attention in language as it is captured in Len Talmy's emerging framework. And one particular phenomenon that has, even traditionally, been associated with the concept of attention, though at most vaguely and intuitively, are verbal sequences which, in the written modality of alphabetical orthographic systems, are marked off as parenthetical from their linguistic environment¹ by a conventionalized set of figural elements, originally pertaining to a non-alphanumeric representational system.

Such parenthetical constructions², immediately susceptible to a systematic and genuine cognitive semantic analysis, will be the target of my paper; the illustration to follow may convey some idea of both their structural variability and complexity:

(1) The rejection of the idea of an academy was to be important in the subsequent development of the language. From that time forward it was clear that the state was not to play a major role in regulating and reforming the language, whether in England or the other nations of the language community—a characteristic that makes English different from many other languages. (In languages like French and German, for example, spelling reforms can be introduced by official commissions charged with drawing up rules which are then adopted in all textbooks and official publications, a procedure that would be unthinkable in any of the nations of the English-speaking world.)

The second sentence in (1) introduces two such parenthetical constructions: The first (underlined) sequence is marked off by a comma, and the second (indicated by the dotted line) by a dash. The third sentence (in parentheses) exemplifies the putative prototype in terms of formal mark-up, and it contains yet another (underlined) sequence separated off by a comma, representing a specific constructional type that regularly includes one from a set of lexicalized expressions, here *for example* (indicated by the wavy line).

In general, parenthetical constructions prove an under-researched phenomenon in (recent) linguistics: Since M. Lampert (1992) there has neither been any systematic, let alone in-depth, examination in the written modality, nor has there ever been any serious analysis of their

¹ I follow Talmy's (forthcoming:2) terminological suggestion to limit *environment* to "the overtly manifested discourse and physical spatiotemporal surround, while *context* can also include more implicit or abstract phenomena such as the overall subject matter of a discourse, the models of the discourse content cumulatively constructed by the participants in the course of their interchange, the participants' background knowledge, and their mutual knowledge of each other".

² For the term parenthetical construction, see M. Lampert (1992:16). Unless otherwise indicated, all examples in this study are from Nunberg's (1999) "Introductory Essay to the Norton Anthology of English Literature, Seventh Edition", which discusses the diversity and unity of the English language through its history and which may be considered an accessible piece of academic prose, conforming to its expected register characteristics and exhibiting distinctive genre conventions. I chose this text on purpose since its author is arguably a professional writer of academic prose and an expert in English punctuation (cf. Nunberg 1990, co-author of "Punctuation" in Huddleston and Pullum 2002), hence the attestations can be seen as undisputable and representative exemplars of English academic writing.

attentional implications—and this is true of both the set of figural elements used to mark off sequences of a text as parenthetical³ and of the parenthesized sequences themselves. This deplorable state of the art may, in part, have been due to the lack of an adequate analytical tool that is sufficiently explicit to capture (all) the relevant characteristics to yield attention as a central notion for parentheticality as a cognitive concept and for parenthetical constructions as a linguistic category. The present study, actually taking up some insights from my 1992 investigation, aims to partially compensate for these shortcomings; however, all it can do is outline the very beginning of a new research project, sketching the fundamental significance of attention for both the concept and the linguistic manifestation of parentheticality. The reason why I am now in a position to do so is Leonard Talmy's work in progress on *The Attention System in Language*⁴, which presents a sophisticated factor model situated within a coherent theoretical⁵ framework of (linguistic) attention that proves to be both sufficiently independent and general to allow for a fine-grained analysis of parenthetical constructions (apparently also) in the written modality.

Proceeding from Talmy's own (2000, 2007a, forthcoming) attentional analysis of parenthetical delivery, I will, as a complement, offer some initial suggestions of how to apply, or adapt, his insights into attention and parentheticality in the spoken modality to the particular conditions and specific demands of the written language. In this vein, taking the spoken and written modalities as "different and equal manifestations of language" (Crystal 2010:185), I will discuss and delineate essential prerequisites for an attentional profile (cf. M. Lampert 2009) of (the) parenthetical construction(s as a general constructional pattern)⁶ which will address some notorious queries reoccurring in the literature, concomitantly demonstrating that parenthetical constructions, in general, are especially susceptible to an application of Talmy's attention framework. Since my paper is supposed to be an initial attempt toward such an analysis, there will be, needless to state, more questions than answers—not least due to the intricacies of the construction itself in both its wide range of functions and forms, as the following exposition will hardly fail to convey.

2. THE 'RECEIVED VIEW': INCIDENTAL INFORMATION AND PERIPHERAL STRUCTURES

Interestingly, among the fundamental problems that keep re-emerging even in the few accounts of structures that would qualify as parenthetical constructions in the sense adopted here are terms that, in one way or the other, in fact invoke attention as a basic explanatory construct. To just very selectively mention a few references alluding to this very concept: The

³ Some treatment, however, can be found in the context of punctuation studies, e.g., Gallmann (1985), Nunberg (1990), Bredel (2008).

⁴ I would like to thank Len Talmy for the privilege of having access to a very substantial current draft version of this forthcoming book (by MIT Press); page numbers in references to this draft are mine.

⁵ This is in contrast to Nunberg's (1990:25) study, which in its basic arguments and major insights appears to be essentially compatible with my view, but explicitly disregards "the question of which framework is most appropriate for text-grammatical description" and instead attempts "to present [the] observations, where possible, in a theory-neutral way". (I express my serious doubts whether such theory-neutrality is possible on principle; I will not, however, be concerned with this meta-theoretical issue.)

⁶ It remains to be settled whether a generalized construction or a set of variant constructional types would be the theoretically preferable solution.

first comprehensive treatment of the ‘parenthesis’ in modern linguistics may be Eduard Schwyzer’s (1939) seminal study, which associates parenthetical constructions with ‘an aside meaning’ („Zwischengedanke“ or „Nebengedanke“, 32-33) that is considered ‘alien’ to the primary layer of information and conceived of as ‘disrupting’ both the syntactic structure⁷ and the line of argumentation of their environment; hence, in rhetoric or stylistics (and in the notorious usage guides, but also in some grammars), parenthetical constructions are usually considered as either undesirable or as negatively connoted digressions, testifying to authors’ lack of clarity in organizing their texts.

Along the same lines, major current reference grammars of English locate the content(s) of parenthetical constructions “in the shade as background”, as “additional” and “related”, providing “supplementary information” which is “not part of the main message” (Biber et al. 1999:137). And, almost as a necessary consequence, the terminology used in the grammars to describe parenthetical structures invokes the concept of (less or lesser) attention: Parenthetical constructions qualify as peripheral elements of clause grammar (Biber et al. 1999); or when specified in terms of the syntactic patterns they allow, syntactic categories like comment and complement clauses along with appositive or non-restrictive (relative) clauses are the relevant surface structures regularly associated. In more idiosyncratic, or at the same time (allegedly) more general terminology, parenthetical constructions emerge as non-dependent, disintegrated supplements (see Huddleston and Pullum 2002:1350)—all of which imply the connotation of minor (structural) relevance.

In contrast to their pervasiveness and versatility in the more formal registers of written language⁸, the absence of any in-depth study⁹ testifies to the general inattention to parenthetical constructions as a ‘self-contained’ object of research in its own right—quite iconic perhaps to their presupposed communicative function. If parenthetical constructions have become the topic of (recent) research at all, it has been with exclusive reference to the spoken modality (cf., e.g., Dehé and Kavalova 2007). It may be added that both Nunberg (1990:1ff) and Bredel (2008:3ff) attribute this scientific neglect (not only) of parenthetical constructions in written language to the general misconception of a tacitly presupposed wide-ranging (if not complete) equivalence of the two modalities, following from the deep-rooted structuralist bias toward (or ideology of) the spoken language as a primary and ‘true’ medium of communication.

⁷ Note that it is syntax (in the reference grammars but also in most current linguistic research) that has turned out to become and still remains the exclusive reference domain of parenthetical constructions.

⁸ Both frequencies of occurrence and structural complexity of parenthetical constructions seem to increase toward the written end of the spoken-written continuum, i.e., those registers that are at a considerable distance to casual and spontaneous conversation. Among fundamentally relevant issues that I will, for reasons of space, have nothing to say about are those related to the register and genre perspective (in the sense of, e.g., Biber 1988 and Biber and Conrad 2009), which keep re-emerging throughout my exposition and which would most urgently need a dedicated study of their own.

⁹ I explicitly endorse Nunberg’s (1990:104) assessment that “the parenthetical, which while far less well studied than the quotation is actually more central to an understanding of the relation of a written text to its context of interpretation”.

3. THE CONCEPTUAL BASIS: GENERAL ATTENTION AND THE ATTENTION SYSTEM IN LANGUAGE

It amounts to a truism to state that attention phenomena are no less than ubiquitous in human cognition—indeed, attention appears to be one if not *the* crucial cognitive principle(s) rooted in the very functioning and evolution (not only) of humankind¹⁰: It has unequivocally been described as one major vital processing mechanism that directly follows from an organism's survival instinct to select relevant objects from the wealth of information present in the organism's environment—be it concrete objects or information for the immediate need to survive, like finding food or warning signals in the animal kingdom, or more artificial objects and information that safeguard survival in a culturally sophisticated and highly literate community in human societies. In fact, the very first sentence from the preface of a recent collection of over 700 pages and over 100 articles summarizing the state-of-the-art in the neurobiology of attention addresses many of the major issues and problems that attention research is coping with to this day: “Key to the survival of many biological organisms is their ability to selectively focus neural processing resources onto the most relevant subsets of all available sensory inputs.” (Itti et al. 2005:xxi)

And it is the general cognitive capacity humans are endowed with, in any of the cognitive (sub-)systems including language, to selectively and differentially distribute their attention over the world-to-be-conceptualized. That is, language itself has evolved as an important mechanism, “directing the interlocutor to make particular focal adjustments ... as he or she creates a mental representation of the meaning packaged in the incoming message” (Taube-Schiff and Segalowitz 2005:508). Given both the ubiquity and the relevance of attention for human survival, there is a highly deplorable state of research on attention and/in language, quite in direct contrast to the plethora of studies, e.g., in cognitive science. And even if Talmy (forthcoming:3) in all modesty concedes that “[m]uch previous linguistic work has involved the issue of attention or salience”, these attempts have yielded indeed only a very fragmentary view of how attention and language link up, not least because research has been pursued in terms of such simplistic and parsimonious dichotomies as topic and focus, given and new, theme and rheme, foregrounding and backgrounding. In view of the limited scope of such approaches (with attention management being mostly confined to focus shifting, referent choice, and assignment of syntactic functions), it makes perfect sense to claim that it is Talmy's (forthcoming:3) recent research which, in his own words,

“may be the first with the aim of developing a systematic framework within which to place all such prior findings—together with a number of new findings—about linguistic attention. In fact, this study is perhaps the first to recognize that the linguistic phenomena across this whole range do all pertain to the same single cognitive system of attention.”

It has been a central commitment of Len Talmy's research agenda, with its decisively cognitive focus and explicit interdisciplinary orientation, to acknowledge the systematic interaction of general attention and language. This link-up of general attention and language becomes feasible in an extant system of language-specific attention which is part of the Overlapping Systems Model of Cognitive Organization (Talmy 1995ff), exhibiting a

¹⁰ The following sketch has been adapted from M. Lampert (2009:4ff).

significant overlap, but no coextension, of language with other cognitive systems (e.g., vision), on the one hand, and system-specific particularities of the language system, on the other.

Perhaps the greatest asset of Talmy's approach to attention is its conceiving the selective and differential distribution of attention over the components of a referent scene as being grounded in a system of "particular linguistic mechanisms" (e.g., Talmy 2007a:264) that inherits its characteristics from general cognition—hence pays respect for all kinds of attentional variability. And this model accounts, in its current 'revised' version, for this diversity by proposing a relatively closed universally available inventory of attention factors which may be individually combined and successively integrated into a comprehensive and highly flexible system of attentional patterns or schemas. In analogy to Talmy's seminal work on the representation of spatial structure in spoken and signed language, such attentional schemas can be considered a "pre-packaged" (Talmy 2003:169) bundling together of attention factors in a particular arrangement. It may ultimately be reminiscent of, and, indeed, find its conceptual analogy in the 'binding together' into 'assemblies', perhaps by synchronized neuronal firing, of distributed neural activity, making his framework compatible with one prominent view on the functioning of attention in the brain; see M. Lampert (2009).

In its current adaptation, 'Linguistic Attention' details a conceptual system of individual attention-specifying devices in language directly relating to cognitive processing, to the effect that any (semantic) component or (surface) constituent of a given linguistic representation is increased or decreased in its (relative) attentional weight. Any such mechanism, "formulated as a contrast between greater and lesser attention" (Talmy forthcoming:1), inherits its characteristic dichotomy from the central nervous system's basic biology, just to impose on this fundamental neurochemical all-or-none mechanism the attentional system's gradient character. To illustrate: Language as a cognitive system, on a par with other cognitive systems like visual perception, the motor system, or culture, is likewise affected by attention as a fundamental cognitive principle, and its effects can be prominently identified as system-specific reflexes of general attention. In light of one such basic attentional principle, e.g., "greater magnitude along a cognitive parameter tends to attract attention to the entity manifesting it", this effect translates into language, for instance, as "stronger stress on a linguistic constituent", while in visual perception it corresponds to, say, "a large size or bright color of a viewed object" (Talmy 2007a:266). That is, the operational system of attention and the substantive system of language converge to generate 'Linguistic Attention', giving rise to a specialized and differentiated inventory of attentionally specified manifestations on all levels of language structure.

In its most recent version more than fifty individual linguistic attention mechanisms assign "different degrees of salience to the parts of an expression or of its reference or of the context" (Talmy 2007a:264), specifically direct hearers' attention and, given the cognitive endowment of humans, would, in the case of written language, also distinctively guide readers in processing parenthesized sequences' structure and contents. The underlying general principle becomes manifest in causal factors that each yields a specific attentional effect (and this effect is different for hearers and speakers—hence, there are hearer- and speaker causal factors). In the following I briefly survey the Attention System's components and internal structure, with individual attentional mechanisms or Areas grouping in (hierarchically organized) Subdomains and Domains:

Domain A is concerned with attentional properties of the morpheme, including Subdomain Aa, Symbolic properties of the morpheme, divided again into Area Aa1, The shape-concept association of a simplex morpheme, and Area Aa2, The generalized form-semantics association of a construction. This is the critical factor for the constructional pattern at issue, which I will briefly comment on below.

Domain B, Attentional properties of a morpheme combination, again differentiated into Subdomains and Areas, I will, for the time being, completely disregard; it would, however, have to be included in an in-depth analysis of parenthetical constructions' combinatorial properties¹¹.

Of immediate relevance for this paper, Domain C, Attentional effects of one entity on another, covers contextual factors in a very broad sense and accounts for intricate context-based effects in a remarkable degree of granularity. For the present study of parenthetical constructions, I will especially have recourse to two Areas of Subdomain Ca, Dedicated causal triggers, that capture attentional effects of one entity on another, namely, Area Ca2, Targeting a referent other than as focus, as well as Area Ca4, Targeting a concomitant of a referent. In contrast to Domains A and B, where the causal factors involve "entities acting in concert or acting on each other mutually, or even acting on themselves reflexively" (Talmy forthcoming:1), the attentional mechanisms of Domain C specify asymmetric effects of one entity on another, that is, they affect entities in the (linguistic) context outside themselves. One of its specific characteristics, particularly relevant in the present context of analysis, "shared-environment triggering", involves "two separate entities ... co-present in a discourse", with the first entity, the (effecting) trigger(ing device), "affecting attention on the other", the selected target (Talmy forthcoming:1).

To achieve this (asymmetric) effect, "the causal trigger must engage some device to select out the relevant second entity from all the entities co-present in the environment and designate it as the causal target"; more precisely, the causal factors operative in this Domain yield "two distinguishable attentional effects": First, a target-yielding phase raises the activation level, hence increases the salience, of the selected entity—an immediate effect of the entity's "designation as the relevant entity out of the entities co-present in the environment" (Talmy forthcoming:2). In a second phase, the target-weighting phase, a further attentional effect is operative that may range from "minimal to substantial": Attention on a target's content "can be increased, decreased, or kept down—that is, the content can be activated, attenuated, or inhibited", which in turn gives rise to the distinctive "dual character of the selectional target and its differential attentional treatment" (Talmy forthcoming:3), characteristic of the present Subdomain. First, the target is highlighted as the selected-out entity, and, in its target-weighting phase, a second attentional effect results in a twofold attenuation in the target's salience, instructing the addressee to consider its referential content as incidental.

Next, Subdomain Ca includes two attentional mechanisms which appear to be of major significance for parenthetical phenomena: Of these, Subarea Ca2(b), Backgrounding the target, identifies a prosodic device as trigger and the prosodically differentially realized

¹¹ Nunberg (1990:36) observes that the parenthetical is "an element of both the text-grammar and the lexical grammar of the written language". Bredel (2008:37f) also claims the discourse level as determinant for parenthetical sequences marked off by parentheses or dashes but not for those separated by commas. Whether it may be reasonable to differentiate between the respective effector domains, syntax versus text, or whether to assume a transitive and hierarchical succession of effects would be more appropriate remains an open issue.

sequence as target, which together capture the attentional effect(s) of parentheticality in the spoken modality, viz. parenthetical delivery. And for the specific constructional type mentioned above that regularly includes one from a set of lexicalized expressions such as *for example*, I will recruit Ca4, Targeting a concomitant of a referent, as a relevant causal factor (see section 5.5). Figure 1 (below) has been drawn up to provide a survey of and contextualize the factors referred to in the analysis to follow.

In addition, to account for some systematic correspondence between the admissible (or possible) figural element (parentheses, dashes, or commas) and its differential (textual) distribution, Talmy's (forthcoming: 6) concept of (types of) constructional slotting suggests itself as explanatory construct:

As a "single more general [triggering] device" constructional slotting details for the generalized form of a construction a structurally designated slot, specifying three distinct devices operative in a given linguistic environment, namely, relative positioning, overlay, and syntactic inclusion, that is, "a trigger entity can select out a target entity within the same environment by occurring beside it, over it, or around it" (Talmy forthcoming:2). Each structural variant of the parenthetical construction will turn out to associate one such device, which may well also (at least in part) account for modality-specific preferences. In the case of sentence-initial and -final parenthetical constructions, relative positioning, i.e., the 'beside' type, is seen to operate; parenthetical delivery, the 'over' type, "can be interpreted as one part of a construction that also contains the constituent it overlays" (Talmy forthcoming:6f), while syntactic inclusion, i.e., the 'around' type, characterizes the sentence-medial (proto-)type of parenthetical constructions. The written modality, then, allows for two out of the three slotting devices and specifies the generalized form of the parenthetical construction—either syntactic inclusion or relative positioning as may be observed in (1), which exemplifies both types of slotting: the sentence in parentheses in the third sentence, and two sequences marked off by a comma and a dash in the second sentence respectively. Overlay, in contrast, is reserved for the spoken modality only. These constraints in slotting devices testify to the strict(er) principle of linearity in written language (cf. Bredel 2008:9. 30f).

4. THE SPOKEN MODALITY: PARENTHETICAL DELIVERY

Overlay, then, as a slotting device is indicative of the attentional profile of parenthetical constructions in the spoken modality: Factor Ca2(b), Backgrounding the target, specifies an attentional mechanism that operates over a linguistic target and gives rise to its characteristic dual nature (as mentioned above). "The parenthetical delivery of an expression seems in general to reduce a hearer's attention on the expression's meaning", yielding an assumed effect that consists "mainly of a reduction in loudness and a lowering of pitch over the expression, while it maintains the internal loudness and pitch relationships—and specifically the stress relationships—among the constituents of the expression"; as a result, "expression-spanning loudness reduction and pitch lowering are together ... able to trigger attentional decrease in a target—in particular, to attenuate the expression's reference" like in the following parenthesized clause, "which, if pronounced as just described, seems to encourage a hearer to treat its content as merely incidental information, readily disregarded" (Talmy forthcoming:48):

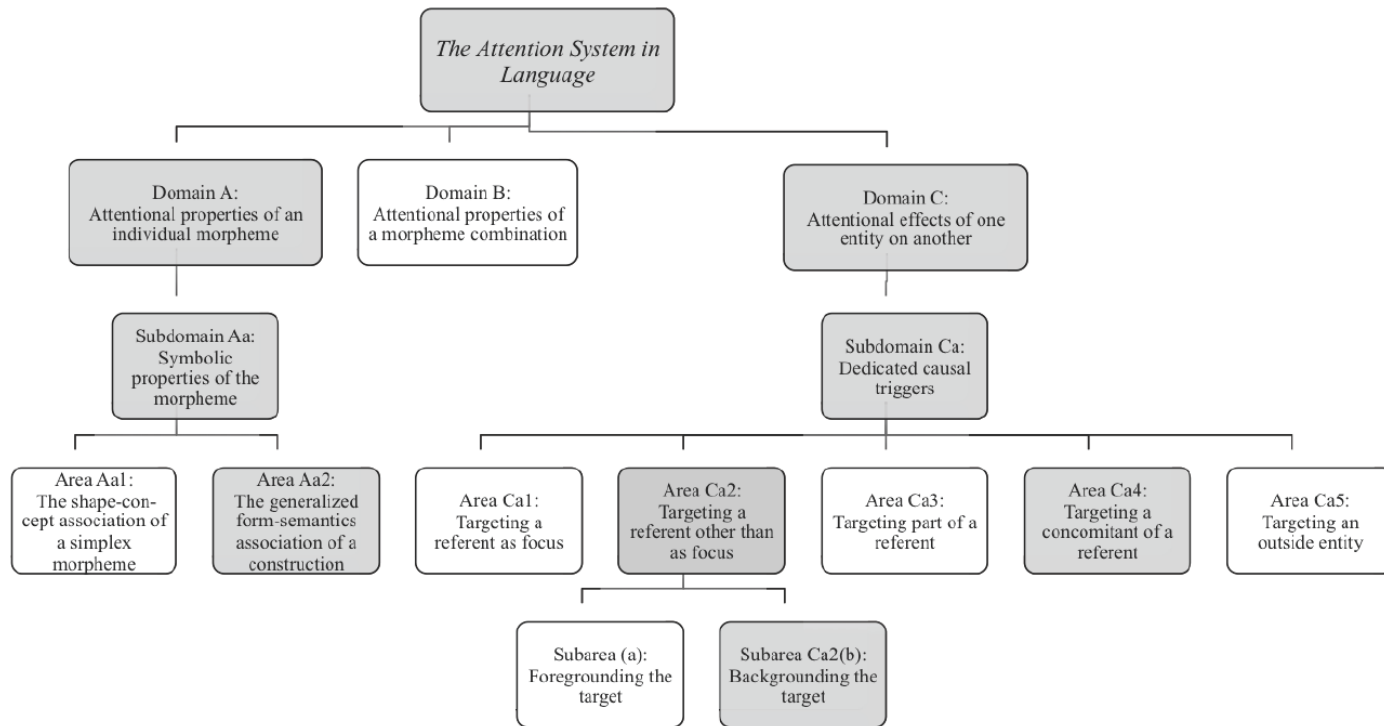


Figure 1. The Domains and Subdomains, Areas as well as Subareas of Leonard Talmy's (forthcoming), *The Attention System in Language*, relevant for the analysis of parenthetical constructions; the shaded boxes indicate the factors that are specifically addressed in this paper.

(2) *My cousin Sue (who happened to be visiting at the time) wanted to go to the museum.*

Talmy (forthcoming:49) states that the “attenuative effect of reduced loudness over an expression derives readily from the attentional principle of quantity”, involving a general cognitive principle: “the smaller the magnitude of some perceptual dimension of a form—here, its loudness—the less salient its referent”; in contrast, the second attenuating effect, lowered pitch, “is not a reduction in any physical parameter—only a specifically directed overall shift in frequency or in wavelength. No general attentional principle that might account for its attenuational effect is obvious.” (Note that this effect—though attenuational—basically rests on a difference principle and might as such be similar to a potential but non-used device in the written modality, e.g., italics to mark off the parenthesized sequence, see 5.4 below.)

In the spoken modality, then, this attenuating type of dedicated triggering device is seen to uniformly lower the salience of both the target form and its referent; i.e., the specific prosodic delivery causes a reduction in hearer attention on the expression’s meaning by reduced loudness and lowered pitch over the parenthetical target. And this reduction in the physical parameters, in turn, decreases attention on the parenthetical target and its referent—the attentional effect, as predicted by the general causal factor. Now, what happens in the written modality?

5. THE WRITTEN MODALITY: PARENTHETICAL CONSTRUCTIONS

In the following, I will probe into major differences as well as correspondences in the ‘attentional behavior’ between spoken and written parenthetical constructions, either allowing for the attentional profiles in the two modalities to overlap to a certain (yet to be specified) degree, or for the language modalities to invoke separate subdomains of attentional mechanisms, which will follow from (categorically) different production and reception possibilities and constraints¹.

To begin with, like in the spoken modality, an author- and reader-causal attentional process of target selection would have to be distinguished that is implemented by a conventionalized set of figural elements from a non-alphanumeric representational system², which designates a sequence marked off by them as the relevant entity, the target; as a consequence, this selected-out parenthesized sequence undergoes activation in its target-yielding phase. The figural elements used in the written modality will most probably generate

¹ Physical and physiological constraints prove to be the major determinants of the language modalities and are of fundamental relevance for any larger-scale investigation; see, e.g., Nunberg (1990: 3f.7.14f); Biber (1988), Crystal (2010), and Talmy (2007b) offer more specific accounts. I cannot, however, go into any details here, but just in passing refer to one fundamental aspect in Talmy’s (2007b) intriguing evolutionary analysis of production and reception circumstances and their ensuing modality-related aspects such as change in the representational format due to the physical constraints of the medium, which separates the analogous, coextensive, and simultaneous spoken system, allowing for gradient and relative distinctions, from the digital and discrete written system of representation, disallowing gradient and relative distinctions.

² Nunberg (1990:6f) emphasizes the independence of this figural “linguistic subsystem” as relatively autonomous and sets it on a par with non-linguistic graphical-representational systems; see also Bredel (2008:10ff). The semiotic interpretation of the figural elements (as indexical, iconic, or rather symbolic elements), however, awaits research; interestingly, Crystal (2010) does not even comment on, let alone specify, the relation of punctuation and graphemes.

an analogous foregrounding effect assumed for the corresponding prosodic device in the spoken modality: an increase in attention on the target following from the fundamental cognitive principle of (perceptual) difference. At the same time, the non-alphanumeric elements, marking up parentheticality in the written modality, qualify as devices that attract attention on themselves, as predicted by the general causal factor operative in Subdomain Ca (see section 3)—exactly how and to what extent they will do so calls for both an in-depth analytical study (taking into account also the historical process of their conventionalization) and an empirical examination (including neuroscientific methodology). As I will argue further, there is, however, a categorical difference both in the type of triggering device and in its effect; to support this claim, I will, first, sketch what it, most probably, means from the perspective of a reader to encounter a sequence in a text exhibiting the perceptual features mentioned. To this end, some terminological suggestions and exemplification of major structural types are in order.

5.1. The Constituents: Parenthesizers, Specifiers, and Parenthesized Sequences

Parenthetical constructions consist of the following structural constituents, with two of them (the figural elements and the parenthesized sequences) being obligatory, and one optional (provisionally called specifiers; see 5.5). Typically, a pair of non-alphanumeric figural elements, a selection from the inventory of conventionalized punctuation marks³, serves as triggering devices to select out the parenthetical target, which I suggest to call parenthesizers. They conform to Talmy's definition of dedicated triggers (see above) and fall into three subcategories, subject to specific (systemic and textual) constraints: parentheses, dashes, commas, and to illustrate them, I will present one example each (from the 'corpus'). Parentheses, for instance, obligatorily occur in pairs:

(3) *Yet for all these changes, there is a continuity here, too, in the way that change is (sometimes heatedly) debated and (sometimes grudgingly) accommodated.*

Dashes in pairs are also mandatory in medial sentence positions (note the specifier *that* is in this example; see below 5.5 for some details):

(4) *It [English] has between 400 and 450 million native speakers, perhaps 300 million more who speak it as a second language—well enough, that is, to use it in their daily lives—and something between 500 and 750 million who speak it as a foreign language with various degrees of fluency.*

And commas are likewise required in pairs in sentence-medial positions⁴:

³ Cf. Nunberg's (1990:36) "delimiters", left and right, as opposed to "separators", typically occurring singly.

⁴ I will have nothing to say about the long-standing notorious issue of which candidate syntactic structural types marked off by commas are to be included as representatives of parenthetical constructions.

(5) *Its grammar was simplified, continuing a process already under way before the Conquest, and its vocabulary was enriched by thousands of French loan words.*

Of the three slotting options introduced in section 3, parentheses are exclusively of the syntactic inclusion ('around') type, while dashes as well as commas are positionally variable (and polyfunctional), and, following from this characteristic, generally conceived as more ambiguous in their capacity to indicate parentheticality⁵. The relative positioning ('beside') type comes in two forms, here illustrated by the sentence-initial case with a dash or a comma:

(6) *Belittle, influential, reliable, comeback, lengthy, turn down, make good—all of these [words] were originally American creations, and give an indication of how independently the language was developing in the New World.*

(7) *Seen from that exclusively linguistic point of view, there would be nothing to distinguish the evolution of Anglo-Saxon into the varieties of modern English from the evolution of Latin into modern French, Italian, and so forth—we would not be able to tell, that is, why English continued to be considered a single language while the Romance languages did not.*

As can be seen in (7), which also contains a second parenthetical construction of the 'specified' type (*that is*) in sentence-final position, dashes (dotted lines) and commas (underlined) may also occur singly and in combination in sentence-final position as (8) and (9) demonstrate.

(8) *We also have to follow the play of centrifugal and centripetal forces that kept the language always more or less a unity—the continual process of creation of new dialects and varieties, the countervailing rise of new standards and of mechanisms aimed at maintaining the linguistic center of gravity.*

(9) *From that time forward it was clear that the state was not to play a major role in regulating and reforming the language, whether in England or the other nations of the language community—a characteristic that makes English different from many other languages.*

(8) and (9), examples of syntactic positioning, combine a comma and a dash, demonstrating, first, the parenthetical constructions' nesting potential and structural complexity (in the formal written registers); second, they illustrate the intricacy of the combinatorial constraints on the two triggers that appear to follow some (attention-related) functionality. For reasons of space, I will not comment on the admissible variants, but see for some suggestions Gallmann (1985:34ff), Nunberg's (1990) absorption rules, and Bredel (2008:34-43).

⁵ This is an attention-related feature, since it seems cognitively plausible to liken 'polysemy' in functional parenthesizers and polysemy in morphemes, which is the focus of Talmy's Subdomain Ae, and which is regularly associated with an attenuative effect on the morpheme's referent. As an immediate consequence, these variants prove problematic in terms of inclusion in or exclusion from a structural category of parenthetical constructions, see previous note.

Yet, there seems to be some room for individual (stylistic?) choice as when in (10) dashes would be a possible alternative for the paired commas and perhaps also for the parentheses (which could, with some change in ‘meaning’, also be replaced with commas, provided the author would not wish to use a figural type twice in the sentence). In any case, it would require a thorough empirical study to document and detail such constraints.

(10) *The resulting total of between 1.2 billion and 1.5 billion speakers, or roughly a quarter of the world’s population, gives English more speakers than any other language (though Chinese has more native speakers).*

Example (11) testifies to a notable attentional bias underlying the English convention to systematically and functionally differentiate between relative clauses by means of punctuation, which, in turn, offers a clear motive to include non-restrictive relative clauses in (at least the ‘national’) category of parenthetical constructions; see M. Lampert (1992), and e.g., Gallmann (1985:144f), who argues against reforming the non-functional, formal-syntactic convention in German.

(11) *The language itself continued to change as it moved into what scholars describe as the Early Modern English period, which for convenience sake we can date from the year 1500.*

The two remaining categories of triggering devices, (Arabic) digits for foot-/endnotes, appendices, and hypertexts as well as graphical devices of text layout (e.g., indentation of paragraphs) will not be a topic in the present article. I will, however, briefly comment on a specific type of parenthetical constructions containing specialized lexical items which may constitute a (structural and functional) constructional variant. These “linguistic forms, intrinsically lexicalized to perform the function of designating a particular target through a specific device” (Talmy forthcoming:3), will provisionally be termed specifiers: *for example, that is, by contrast, in particular* etc. (for whose analysis I will have recourse to another causal factor from Talmy’s language-specific system, see 5.5 below).

And, finally, there are the (obligatory) parenthetical targets marked off by the parenthesizers (and optionally accompanied by the lexical items referred to as specifiers; see 5.4 for some of their attentional specifics). To briefly illustrate the structural variability and complexity of the parenthesized sequences, which may range from the submorpheme level to whole text fragments, (12) through (14)⁶ exemplify the minimal end, a parenthesized grapheme and (a sequence of) punctuation marks, exclamation points or questions marks:

(12) *W(h)ither English?*

(13) *He took pianists, guitarists and harpists in stride, but expressed shock at “13 young lady violinists (!), 1 young lady violist (!!), 4 violoncellists (!!!) and 1 young lady contrabassist (!!!!).*

(14) *While ego orientation did not emerge as a significant predictor of likelihood to aggress in any of the three groups, significant correlations were found between ego*

⁶ Examples (13) and (14) are retrieved from the *Corpus of Contemporary American English*. <http://www.american corpus.org>

orientation and likelihood to aggress for boys, $r(???) = .20, p < .005$, and girls in the all-girls league, $r(???) = .40, p < .005$.

Note that for the last two cases it would be hard to maintain the idea that the content of a parenthetical construction by necessity be attentionally attenuated; see for some details section 5.5 below.

And, additional to the above cases of ‘intermediate’ structural complexity, (15) illustrates an example where the (underlined) parenthesized sequence consists of two full sentences; it is the most complex structure containing parenthesizers (of the first subcategory) found in the ‘corpus’.

(15) *And there is a large number of common words for talking about the language itself, for example slang, usage, jargon, succinct, and literate. (It is striking how many of these words are particular to English. No other language has an exact synonym for slang, for example, or a single word that covers the territory that literate covers in English, from “able to read and write” to “knowledgeable or educated”).*

To just add one brief note on the textual contingency of the parenthetical construction, which would readily require an extended study of its own based on a detailed register, style, and genre analysis in the first place (see footnote 8): After the ‘closing’ parenthesis, the text continues with a new paragraph—which may well support the argument that the genuine linguistic ‘level’ at which the parenthetical construction should exclusively and can consistently be analyzed is the text (see footnote 11). Due to space limits, I will refrain from illustrating parenthesized targets of the paragraph type.

5.2. The Reader’s Perspective: Some Tentative Remarks

As a first step, it may be sensible to survey some perceptual characteristics that will probably catch readers’ attention when they encounter a parenthetical construction in a given written linguistic environment.⁷ For reasons of both simplicity and space as well as for want of serious studies, I will restrict my preliminary illustration to parentheses, the presumed prototypical case of parenthesizers, like in (3) reprinted from above:

(3) *Yet for all these changes, there is a continuity here, too, in the way that change is (sometimes heatedly) debated and (sometimes grudgingly) accommodated.*

Following the linearity constraints of the reading process, a reader of (3) will, after two graphemes in succession, the second occurrence of *is*, and an obligatory blank space, encounter one figural element from the non-alphanumeric set characterized in section 5.1 above, in this case the left-hand parenthesis. This ‘opening’ parenthesis is immediately followed by a succession of graphemes, which, interrupted by another blank space, separating off two lexical items in their specific linear sequence, constitute the appropriate word forms required by the constructional slotting, the adverbial phrase *sometimes heatedly*.

⁷ In this description, I do not imply any claim whatsoever about the actual on-line processing.

Directly attached to the second word form is another such figural element, the complementary right-hand ‘closing’ parenthesis, signaling the end of the parenthetical construction, which is followed by another blank space and another sequence of uninterrupted graphemes, here the main verb *debated* (which represents the predicate of the first clause and is often referred to as the host, or anchor, of the parenthetical construction, cf. Huddleston and Pullum 2002:1351). (Again, it is an empirical issue whether, plausibly so in the present case, readers will have both parentheses in their visual focus, processing them ‘simultaneously’ as a pair; aspects like readers’ familiarity with the pattern and/or the content of the text etc. will also play a role.)

To analyze the effect of the parentheses on the reader in general perceptual terms would mean to specify the figural elements as salience phenomena that relate to an inherent physical quality of this stimulus which is subject to bottom-up, data-driven visual processing. Typically, stimuli of a different shape than their environment generate a fundamental perceptual pop-out effect, which is a basic attentional ‘behavior’ similar to the orienting reflex well-known in pattern recognition and visual feature integration research since the seminal study by Treisman and Gelade (1980). The attention phenomenon encountered here can, in a functional perspective, be epitomized as novelty effect (that is, novel items tend to be given priority of processing over familiarized items; cf. M. Lampert 2009:123). The parentheses, then, both left and right, first attract attention to themselves by virtue of their difference in figural shape as against their shared linguistic environment (all of which consists of elements from the graphemic inventory of alphabetical script); and the differential shape is responsible for the parentheses to pop out, and, thus, attract attention to themselves. What exactly this means for on-line processing essentially proves an empirical neuroscientific question: whether readers engage in different processing activities and, if so, what the actual mechanisms are.

5.3. The Triggering Device: Toward an Attentional Characterization of Parenthesizers

In light of this provisional sketch, it is to be expected that the perceptual difference accomplished by the parenthesizers will trigger has an effect on the reader that is accounted for by the causal attention factors introduced above. These predict that the pair of figural elements will set the embraced item(s) off from their linguistic environment and designate them as the selected-out target, which will undergo activation in the target-yielding phase. Whether or not the subsequent target-weighting phase uniformly yields an attenuative effect, as is presumed in the traditional accounts of parentheticality, is very much open to debate. (I will rather submit that the specific attentional effect in the target-weighting phase appears to be crucially dependent on contextual and higher text-level parameters, see 5.5.)

In comparison to the production and reception circumstances of spoken language, which systematically allow for gradient activation and attenuation from “minimal to substantial” (Talmy forthcoming:3)⁸, the written modality does not offer the same relative gradience in a quantitative dimension for its triggering devices (see section 5., footnote 1). The linguistic

⁸ Some experts claim that there may be any indication lacking, even taking (initial) non-indication as the default case for some types, e.g., parentheticals like *I think* (cf. Dehé and Wichmann 2010).

subsystem of parenthesizers in alphabetical languages relies instead on a principle of categorical (figural) difference and, accordingly, has conventionalized only discrete, all-or-none devices—with no perceptually feasible reduction effect that lowering loudness or pitch afford when indicating less salience in some physical parameter. In the written modality, the parenthesizer is either present or absent; that is, there are discrete parentheses, or any other instance from the inventory of markers (dashes, commas, numbered foot-/endnotes), or there are none. Also, these triggers are essentially separative, ‘point-like’ spatial delimiters, unequivocally signaling the beginning and end of a parenthetical construction in the case of the more typical and unequivocal syntactic inclusion type⁹. Again, contrary to their functional equivalent, the overlay of parenthetical delivery in the spoken modality, they are not coextensive with the parenthesized sequence: The first parenthesis in (3) precedes the parenthesized sequence, ‘announcing’, so to speak, that the sequence to follow should be treated differently in some respect (but not necessarily resulting in uniform attenuation; see next section), until the ‘closing’ element is encountered to ‘cancel’ the difference. Like before, it would demand further investigation to find out whether there are differences in activation between the left and right parenthesis (or dashes when they occur in pairs); with reference to the two (competing) general cognitive effects, privilege of primacy and the recency effect (which relates to memory), some differential should however be expected.

In this context, I would like to draw on an analogy which is found in another figural representation system, as when a traffic sign, announcing a speed limit, e.g., is understood to be valid for an explicitly specified or conventionally defined time interval, only to be canceled by a second (different) sign. In semiotic terms, the parenthesizers in the written modality would, as far as their function is concerned, have to be analyzed as indexes, characterized by some diagrammatic iconicity; cf. M. Lampert (1992:74).

Gradience (motivating the diagrammatic iconicity) becomes feasible in the written modality in more than one respect: Here, a secondary gradience effect of attenuation and a possible hierarchy which is imposed on the discrete nature of the parenthesizers would predict a ‘stronger’ attentional impact of parentheses as against, say, commas. As to a provisional suggestion, parentheses (due to their physical characteristics and their exclusiveness in signaling parentheticality) are plausibly assumed to attract more attention to themselves than commas, which are not only ‘inferior’ as functionally underspecified, ambiguous, and competing indicators of parentheticality (cf. Nunberg 1990:83f, non-parenthetical separator vs. parenthetical delimiter) but also for their physical attributes (size, position, and shape, cf. Bredel 2008:24ff). Hence, the target-yielding phase is expected to result in a higher level of activation with parentheses than in the case of commas, eventually giving rise to said prototype effects; and assumptions like these are generally surfacing in the punctuation studies (see, e.g., Bredel 2008:37)—though there is, to my knowledge, no empirical evidence so far that would corroborate such claims.

5.4. The Targets: Attentional Attenuation—A General Effect?

In principle, the written modality would not prohibit attentional gradience with regard to the target. For instance, it might be imaginable that the parenthesized sequence were reduced

⁹ In case the (above) secondary gradience argument is plausible, the effect appears to be less clear for the commas.

in print size, say, 11 pt in a typographical environment of 12 pt, which, though of course being a discrete device, would generate a secondary gradience effect. Or, the use of light fonts in a context of regular fonts (which might then correspond to the reduced loudness over an expression in the parenthetical delivery of the spoken modality) would implement basically the same attentional principle of quantity, i.e., reduction in a physical parameter. But exploiting such attenuating potential of fonts has not been conventionalized as a general ‘visual’ strategy, even if reduced font sizes are common practice in some disciplines of academic writing for quotes exceeding, e.g., three lines, and/or in footnotes. It should perhaps be added that parenthesized targets also do not feature another (non-attenuational) graphical format such as italics that would set them perceptually off from their surrounding to (re-)direct readers’ attention, thus generating a system-specific attentional effect based on a cognitive principle of physical difference like the presumed pop-out effect of the parenthesizers, while retaining the outward appearance of their linguistic environment (see section 4 for an assumed analogy with the parameter of pitch). The only indication of parentheticity is delimiting the sequence.

If, however, Factor Ca2’s impact is generalized to operate in the written modality also, the following query immediately arises: While the first effect, an increase in the parenthesized sequence’s salience qua being the selected-out target, is correctly predicted and achieved by the parenthesizers, how should the attenuative effect that is assumed to hold for the parenthesized sequence’s referent be brought about in the first place? There is no such perceptual parameter that would display the same decrease in target salience as the parenthetical delivery in the spoken modality: The parenthesized sequence is simply not physically different, and so no perceptual effect (in either attentional direction) can reasonably be expected. The assumption of a parenthetical target’s attenuation associated with this constructional pattern can thus only be understood as a convention, an effect of (prescriptive?) formal instruction or cultural practice, which might or might not have been negotiated in the literate community.

Even on first inspection, however, there are numerous counter-examples in the written modality where the referent of the parenthesized sequence cannot plausibly be claimed to just be attenuated—on the contrary, it is rather supposed to be attentionally activated. Examples (12), reprinted for convenience, and (16) may be cases in point:

(12) *W(h)ither English?*

(16) *The (Un-)Emotional Male*

To argue out this point: First, the (conventionalized) formal constraints on the usage of parentheses do not allow for the reverse attentional result—the parentheses necessarily embrace the ‘add-ons’ (<h> and <un->) but not the ‘minimized’ morphemes (<with> and <emotional>); so there is no alternative mark-up available, hence no ‘natural’ (perceptually based) preference, for one or the other reading. Second, a brief analysis of (16) is in order to demonstrate how deliberate writers exploit both the attenuation and the activation effect to create the ambivalence crucial for their intended reading (cf. M. Lampert 2009:345-347). Here is a presumptive paraphrase of *(un)emotional* in its original context, the title of a 2001 article by Mark A. Hurst et al., “The (Un)Emotional Male: Physiological, Verbal, and Written Correlates of Expressiveness”: ‘Though being unemotional may conform to a commonly presupposed stereotype of a male, it is rather the reverse quality ‘emotional’ that is seen to

hold for at least many males'. And the parenthesized bound morpheme (*un-*), in fact, conveys the instruction for the reader to make available the two (contradictory) readings referred to at a time. Hence, it is considered vital, in the present case, to understand the implication that men are *both* emotional (in deviance from the stereotype) *and* unemotional (the 'real' personality trait of a typical male, as the author most probably intends to convey). It is a matter of debate, of course, which of a male personality's facets should in fact be the 'valid' one, and this ambivalence is actually the most probable (intended) message: that men, contrary to their consciously performed or habituated facework, only pretend to be unemotional but are in fact highly emotion-driven beings.

Immediately, the strategic potential of such ambivalence becomes obvious: It is exactly this 'double-speak', or rather: hedging function, of parenthetical constructions that indeed proves a convenient textual strategy to be (consciously) exploited for specific (non-?)communicative purposes. In light of this reasoning, there cannot and should not be any attentional difference in significance between the reading with and without the parenthesized sequence: Neither is there a more attended nor a less attended variant, unless one would exactly presuppose one single¹⁰ cultural model associated with parentheses, since there is in fact no alternative in its formal representation. Again, contextual factors (including readers' mindset and expectation) will play a decisive role in determining the preferred, or 'first', reading.

For the next two examples, reprinted from above, attenuation as an attentional effect of the parenthesized sequence whose referent should readily be disregarded can hardly be a plausible option either. (Note that these are the only attestations of four consecutive punctuation marks in parentheses found in the COCA, but they may illustrate how far even authors of academic articles would go.)

(13) *He took pianists, guitarists and harpists in stride, but expressed shock at "13 young lady violinists (!), 1 young lady violist (!!), 4 violoncellists (!!!) and 1 young lady contrabassist (!!!!)."*

(14) *While ego orientation did not emerge as a significant predictor of likelihood to aggress in any of the three groups, significant correlations were found between ego orientation and likelihood to aggress for boys, $r(????) = .20, p < .005$, and girls in the all-girls league, $r(???) = .40, p < .005$.*

Similar to (12) and (16), the pattern of successively more repetitions of punctuation marks as parenthetical targets is meaningful in this sequence, where a conscious author has chosen to deliberately emphasize their arguments to an iconic, hence 'semantic', effect. These examples of parenthetical constructions, then, if not straightforwardly highlight, but in any case qualify, the intended reading and meta-cognitively indicate a specific type of communicative purpose, that is, they communicate an author's stance, which might result in a polyphonic text structure (see Bredel 2008:148). And whether this will unequivocally result in a decrease in attention remains to be settled, preferably by empirical studies.

¹⁰ For the present examples, then, one would in fact have to postulate more than one function, or structural pattern for that matter.

5.5. The Optional Factor: Dedicated Lexicalized Items, Targeting Concomitants?

As to the structure of the parenthetical construction, there is a variant that, in addition to the non-alphanumeric characters, includes sequences like *for example*, *that is* etc. Here are two examples from the same context that address the very same issue, namely exemplification of lexical changes in American English; disregarding the variation in the parenthesizers for a moment, which is in these two cases probably due to some stylistic (non-functional) consideration since both figural elements could well be used interchangeably, (17) and (18) may qualify as a structural and functional minimal pair:

(17) ... words that had fallen into disuse in England (din, clod, trash, and fall for autumn)

...

(18) Some of these [words] answered to their specific needs and interests—for example, squatter, clearing, foothill, watershed, congressional, sidewalk—but there were thousands of others ...

To account for the difference between these constructional variants, which may not least be an essentially attentional one, it seems plausible to have recourse to Area Ca4, Targeting a concomitant of a referent, a factor that probes into attentional specifics of quotatives. This move in my analysis will rest on acknowledged¹¹—or at least potential systematic (?)—connections between parenthetical constructions and quotations. The link-up is brought about by *for example*, which may be categorized as a triggering device “lexicalized to select out as its target a specific linguistic constituent, together with the constituent’s associated semantics” (Talmy forthcoming:57). I suggest calling these devices specifiers as they verbalize the specific relation assumed to hold between the referent of the parenthesized sequence and the linguistic environment outside.¹² Such dedicated triggers, always optional in addition to the parenthesizers, explicitly instruct the reader to process the parenthesized sequence in a way intended by the author—in (18) as an exemplification; by contrast, (17) does not ‘window’, i.e., overtly express, the presupposed exemplification reading but leaves it to the reader to infer that the words mentioned do not constitute an exhaustive set.

More specifically, as touched upon above, *for example* in (18) appears to match Talmy’s (forthcoming:3) definition of dedicated triggers that are “intrinsically lexicalized to perform the function of designating a particular target through a specific device”, which, however, only selects out a concomitant aspect of the target’s referent. Since this is not familiar territory, I will quote from Talmy’s (forthcoming:57) ongoing research:

“Each dedicated form of this type is lexicalized to select out a particular constituent from the local clause ... and also a particular concomitant of that constituent’s referent. This can be regarded as the target-yielding phase In the target-

¹¹ See, e.g., Nunberg (1990:104) and Bredel (2008:139ff); this analogy is also supported, from a grammaticalization point of view, by the recent development of quotative *be like*, which is motivated by its semantic relation to ‘for example’, see, e.g., Romaine and Lange (1991:253).

¹² In the context of causal factors and their attentional effects, a first issue is whether this instruction is plausibly a part of the target or not; in a purely formal perspective, it is without any doubt a constituent of the sequence embraced in parentheses or dashes—but functionally it would seem more plausible to conceptualize it as yet another type of trigger.

weighting phase, the selected-out concomitant receives increased attention In directing a hearer's attention to aspects of linguistic organization or to aspects of his own cognitive processing, rather than to the direct referring function of a constituent—its default function—such forms establish certain kinds and degrees of meta-linguistic awareness in the hearer pertaining to the constituent or its referent.”

The analogy I would especially like to invoke refers to the attention-to-wording function of triggers like the particle *quote*, which a “speaker can insert ... just before citing a particular utterance” (Talmy forthcoming:58) and which selects out a particular concomitant of a constituent's referent from the local linguistic environment. And while for *quote* the concomitant is “the specific selection of morphemes in their particular sequence” (Talmy forthcoming:58), that is, their exact wording, in the case of *for example*, it would be the specific informational status as an exemplification—or with reference to Talmy's suggestion: The reader's attention is directed to aspects of linguistic organization or of their own cognitive processing.

Talmy convincingly motivates the use of *quote* with reference to Gricean principles¹³; likewise, such conversational maxims (or any other social or stylistic norms) may plausibly uncover some motivation for cases like (18)'s *for example* (reprinted here again):

(18) *Some of these [words] answered to their specific needs and interests—for example, squatter, clearing, foothill, watershed, congressional, sidewalk—but there were thousands of others but there were thousands of others that had no close connection to the American experience as such ...*

The author may, in exemplifying, well feel that, for some (expert) readers, an alleged ‘second’ linguistic representation could amount to a face-threatening act, since the ‘main’ text and the exemplification are supposed to convey the same referential content, conceptualized intensionally first, and then extensionally specified. In the present context, the analogy would basically rest on this line of argument: English settlers in North America rapidly develop their own characteristic forms of speech, retaining words from England, giving new senses to old words, freely borrowing from contact languages, and coining new ones (cf. Nunberg 1999:9f); and this last statement now receives evidential support (which an expert reader definitely would not need, especially given that *there were thousands of others*), in that the author adduces some exemplification: *squatter, clearing, foothill, watershed, congressional, sidewalk*. The specific parenthetical form, typically associated with incidental information to

¹³ A similar suggestion is already found in M. Lampert (1992:78ff). And to offer the original analysis: Talmy's (forthcoming:59) examples are *So she said to him, quote: You need to take a bath.* vs. *So she said to him that he needed to take a bath.* In the first example “this particle directs the hearer to attend not only to the overall referent of the expression that follows, but especially to its exact wording—that is, the specific selection of morphemes in their particular sequence. The speaker typically intends a certain function in directing attention this way. He believes that roughly the same referential content could have been evoked by a different expression closer to Gricean maxims or to social or stylistic norms. But he feels that the actual utterance, by virtue of its particular selection of words and their placement, diverges from that ideal in some direction. This could, for example, be in the direction of bluntness, hyperbole, odd affect, or legalistic caution. By using *quote*, the speaker intends to alert the hearer to such a divergence. In [the first example] this divergence is presumably the bluntness of the remark. By contrast, when the utterance is represented as indirect speech, as in [the second example], the construction directs the hearer's attention to the same semantic content, but not to any special effect that the speaker might feel the original wording engendered.”

be disregarded and hence most probably invoking the ‘asideness’ connotation, proves an appropriate means of conforming to the politeness principle (i.e., following a social norm) in a communicative situation of various, even opposite reader demands. Such strategy has thus, in the case of academic prose, gained the status of a register-specific text ‘move’ from intensional exposition to extensional qualification: Confronted with (potential) readers¹⁴ who would need the ‘repetition’ to reconstitute the author’s intended information and experts who are immediately able to retrieve some of the words listed, the author, in expressing the designated reading explicitly, alerts the readers to this distinctive informational status, here an exemplification. The reader is invited to direct their attention to what I would like to conceive as an organizational concomitant of the text to be processed: The dedicated trigger *for example* makes explicit the informational organization of the text, more specifically the relation between the progressing line of argument and the sequence to follow, i.e., the parenthetical target, and instructs readers to engage in a specific form of cognitive processing: ‘read it as an example not as an independent, self-contained statement contributing to the text(ual) progression’. And this means that rather than exclusively attending to the direct referring function of the lexical items like those enumerated in (18), the reader is assigned to also direct some attention to their concomitant function as examples, hence to the meta-linguistic status of text organization in terms of exemplification. Whether the parenthetical target thus specified is attentionally attenuated or activated seems (exclusively?) a matter of higher-level text functions, including a complex of interacting situational characteristics (cf., e.g., Biber 1988:28-58) and, ultimately, as a unique interaction between the given text and an individual reading experience, probably with no a priori generalizations possible.

6. THE RESEARCH AGENDA: SKETCHING AN ATTENTIONAL PROFILE OF (THE) PARENTHETICAL CONSTRUCTION(S)

In light of the exposition so far, it indeed turns out unquestionable that without recourse to an encompassive analytical framework informed by a sophisticated theory of language-specific attentional parameters any sensible investigation of parenthetical constructions proves pointless. The basic (strong) claim, then, is that parenthetical constructions are a linguistic phenomenon that is ‘simply’ defined by (a selection of) attentional mechanisms, which, just like Talmy’s model assumes, systematically interact in various forms of reinforcement, competition, and conflict to yield a(n) attentional profile(s).

At the same time, my sketch may have revealed that it is highly questionable to adhere to the ‘traditional’ view (or, rather: bias) that presupposes far-reaching shared cross-modality commonalities of the parenthetical construction, or considers the written modality even being parasitic on the spoken modality (reflecting the conditions of speech as well as it can).

What is in fact common to all parenthetical constructions to be perceived as such, irrespective of the modality, is that there is a vital, perceivable difference between them and the linguistic environment; otherwise there would not be a parenthetical construction at all. Hence the distinctness of parenthetcity must become (sufficiently) salient for addressees: In the spoken modality, the parenthetical delivery may well serve as a convenient dedicated

¹⁴ This suggestion appears to be in line with Nunberg’s (1990:109) “presumptive reader” and also compatible with Bredel’s (2008:147ff) “covert/overt writer”.

trigger to mark off parts of utterances as parenthetical. Yet research has also observed that the parenthetical delivery may (regularly?) ‘dissolve’, as in the case of some parentheticals (especially) in casual speech. This behavior may, however, directly follow from the type of devices available in (and native to) this modality: Vocal dynamics only allows for gradient modifications like reduction in loudness and shift in pitch, which by their very nature are intrinsically less distinct. In the written modality, by contrast, a set of discrete devices is conventionalized as dedicated triggers that ‘pop out’ as different from their environment, though with different degrees of clarity: Monofunctional parentheses are most successful in performing this task, and this is perhaps why they are generally acknowledged as the prototype; dashes fare less well in discriminating parenthetical constructions from their environment—unless they occur in pairs, representing the syntactic inclusion type of constructional slotting. Polyfunctional commas, even in the inclusion type, are the least felicitous devices to unambiguously indicate parentheticity; this becomes very obvious in the case of German relative clauses, where it would be necessary to use a more ‘prototypical’ device than the comma to unequivocally designate the parenthetical quality if desired.

In fact, in a cross-venue comparison of the criterial components, the modality-specific differences of parenthetical constructions appear to be more salient than the commonalities: First, the parenthesizers in written language employ a different kind of triggering device—they delimit and mark off a sequence (and its referent) twice, in advance and in retrospect, as distinct from the (preceding and following) linguistic environment, while in spoken language the device of parenthetical delivery is coextensive to and simultaneously ‘performed’ with the temporal extension of the complete parenthetical sequence’s utterance, manifest in the overlay of the parenthetical delivery. The parenthesizers, by contrast, occupy a separate ‘space’ before and after the parenthesized sequence, and thus parenthetical constructions in the written modality display a clear pattern of successiveness due to the modality’s strict(er) linearity—they do not establish a co-spatial layering.

Parenthetical targets, when considered for the attentional effect(s) predicted by their triggering devices, would, following the received view, be biased toward a cross-modality pattern that results in a general attenuation of their referents. However, the attentional implications rather seem to be quite different across the modalities; and again these attentional differentials follow from categorical differences in the production circumstances: A generally hypothesized attenuative effect on the referent of the parenthesized sequence, I claim, would fall short of accounting for the (variety of the) construction’s communicative purposes in the written modality. As has repeatedly been noted, the precise identification of the actual attentional effect(s), whether attenuating or activating, has recourse to higher-level functions of text organization and, hence, would presuppose a coherent semantic theory of text organization, which is, however, unavailable to date (cf. also Nunberg 1990:102). Also, as the few examples from the ‘corpus’ have demonstrated, the range of both the structural variety and the complexity parenthetical constructions allow (especially in the more formal registers of written language) corresponds to the categorical differences of situational features, like the opportunity (and the expectation, indeed) of deliberate planning and multiple revising of texts as against spontaneous interactive discourse—which is expected to feature more prefabricated sequences like the parentheticals or short comment clauses. The sophistication that parenthetical constructions manifest in written language appears to directly disprove another generally held prejudice, namely that this constructional option is an ad-hoc

‘remedy’ for an author’s negligence or even inability to follow a logical line of argument (cf. e.g., Bredel 2008:146).

Provided the attentional analysis of specifiers suggested in 5.5 is plausible, this subtype of parenthetical constructions would testify to a commonality between spoken and written language, which here would not differ both in terms of the devices they call for and in the attentional effects expected: Irrespective of the modality, *for example* as a dedicated form lexicalized to select out a concomitant aspect of the target’s referent would specify the same relation of exemplification between the non-parenthetical environment and the parenthesized sequence.

To round off the exposition so far, I will sketch a provisional attentional profile (cf. M. Lampert 2009) of (the) parenthetical construction(s) with reference to Talmy’s (forthcoming:7-16) Area Aa2, The generalized form-semantics association of a construction, which critically assumes “the irreducibility in the association between its form and its semantics” (Talmy forthcoming:8), “a construction’s capacity for constraint and optionality” (Talmy forthcoming:9), and a “consequent property of a construction to relate a family of similar forms to a family of similar meanings” (Talmy forthcoming:14), hence “association”. In the following, only some aspects from Talmy’s analysis are addressed, but any precise inspection remains yet to be done.

As to their generalized form, the following variants constitute the inventory of options in form types and thus illustrate the combinatorial variation in parenthesizers, along with their constraints by syntactic slotting. Again, for reasons of space, the parenthetical formats beyond the sentence are disregarded, and the construction’s generalized form is only detailed for the parenthesizers, with their slots exclusively representing the categories of the constituents. (Note that bold-faced items are obligatory and the bracketed items, i.e., the ‘category name’ dedicated verbalized trigger and the following comma, are optional constituents.)

- (i) ([dedicated verbal trigger[,]] **target**)
- (ii) ([Dedicated verbal trigger[,]] [**T**]**target**)
- (iii) —[dedicated verbal trigger[,]] **target**—
- (iv) , [dedicated verbal trigger [,]] **target**,
- (v) —[dedicated verbal trigger[,]] **target**.
- (vi) , [dedicated verbal trigger[,]] **target**.
- (vii) . [dedicated verbal trigger[,]] **Target**—
- (viii) . [Dedicated verbal trigger[,]] [**T**]**target**,

Parentheses regularly manifest the syntactic inclusion type, they may embrace (a) complete sentence(s) with (a) full stop(s), and there are no blank spaces between them and the parenthesized sequence(s); cf. (i) and (ii), which represent the case of a parenthesized complete sentence. The English pattern allows for an n- or m-dash as well as two ‘hyphens’, in the syntactic inclusion case, either with two blank spaces ‘embracing’ the dashes or not (see iii), while the commas in (iv) are regularly followed (but not preceded) by one blank space. For the relative positioning type, a complex pattern of interactions emerges: An ‘opening’ parenthesizer is obligatory, which in sentence-initial positions is conceptualized as being ‘co-entailed’ (or, following Nunberg 1990, ‘absorbed’) in the preceding blank space and capital letter. In sentence-final position, a complementary situation holds: An obligatory ‘closing’ parenthesizer is again ‘co-entailed’ (absorbed) in the following conventionalized full

stop (question mark or exclamation point). To detail the patterns for the individual parenthesizers: Blank spaces may or may not occur before and after the dash in sentence-final and -initial positions respectively, and a full stop without a blank (see v), while a blank space is required after the comma, as in (vi). After a preceding full stop in the case of a sentence-initial parenthetical construction, the dash may again be ‘embraced’ by blanks (cf. vii); sentence-initial parenthetical constructions marked off with a comma have no blank space before but after the comma, see (viii). (Note that the order of the patterns may be suggestive of a probable attention-driven hierarchy, with the parentheses yielding prototype effects.)

In view of its generalized semantics, I will only mention some selected aspects of (the) parenthetical construction(s), since a detailed analysis would certainly afford a book-length treatment, just as Talmy (forthcoming:14) states after a brief sketch at the beginning of his study: “A construction’s generalized semantics covers much more than described here, such as relating successive parts of a discourse (e.g., anaphors), relating morphemic content to the surrounding context (e.g., demonstratives), and directing greater or lesser attention to one or another entity, the subject of this book.”

The crucial question, then, that is likely to arise in this context is why parenthetical constructions exist in the first place. One reasonable suggestion may be that, as a meta-cognitive device, they establish an additional (separate?) text level, hence circumvent the linearity constraint of the linguistic medium’s spatial two-dimensionality and then associate, as a general cognitive parameter, divided attention—that is to say, they convey two ‘messages’ at a time, or, as Nunberg (1990:115.116) has it, parenthetical constructions, like quotations, “depart from a presumptive text”. If attenuation as a general feature were retained, it would mean that, in writing, parenthesizers instruct readers to direct some attention away from the default processing of a text in terms of developing a topic coherently in a linear form of progression. At the same time they would direct some attention to a currently relevant communicative purpose ‘outside’ this ‘running’ line of argumentation or information structure, that is, to the ‘inside’ of the parenthesizers, conveying some information with a distinctive status. (Note the parallel formulation to Area Ca4, above.) In case there is a specifier, this special status is verbalized—otherwise the reader will have to infer the relation between the two levels of text organization and their cognitive processing.

With different parenthesizers at separate linguistic ‘levels’—all having their structural constraints and distinct attentional effects—the inventory calls for detailed and differential same- and cross-venue comparative analyses specifying their attentional (and functional?) impact: Parentheses operate in morphemes and beyond, up to the paragraph-level; dashes are only admissible beyond morphemes and are limited by the sentence level; commas are only found above the morpheme and below the sentence level; and foot-/endnotes presuppose the whole text as domain. In general, parentheses will attract more attention to themselves than, say, commas, because of their physical qualities and their functional characteristics. Hence, there is, first, a distinction in their own attentional values: Differences between the parenthesizers may be arranged (though discretely) along a scale, giving rise to a hierarchy of triggering devices with prototype effects. Whether there is some other cognitive dimension intrinsic (?) to the shapes according to which parentheses, dashes, commas could impose gradience (analogous to the magnitude dimension in parenthetical delivery) awaits exploration. Second, it remains an open question, too, whether, and if so how, this attentional difference is ‘transmitted’ to their targets; i.e., they will differentially be affected and thus differ in the potential to be perceived as parenthetical.

And, finally, with reference to Len Talmy's Linguistic Attention, there are two critical questions: Whether a modification or accommodation of the 'spoken' factors proves sensible that will then account for the conditions of parenthetical constructions in the written modality; or whether a major reanalysis of the factors subserving the relative autonomy of the 'written' subsystem is called for—suggesting, in a somewhat larger perspective, an attentional (sub-)system for written language in general which would be based on the evidence that the attentional profiles follow from categorically different production circumstances (and their effects on reception).

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Chapter 81

THE SOCIALLY EMBEDDED AND DYNAMICALLY EMBODIED NATURE OF METONYMY'S PROTOTYPICALITY

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ABSTRACT

The social and embodied nature of language has recently been making strides into the understanding of language use and development (Geeraerts, Kristiansen and Peirsman 2010; Feldman 2008). This paper attempts to build upon and further integrate these perspectives by looking at metonymy from a sociocognitive (Hill 2006) as well as dynamic perspective (Spivey 2007). Firstly, Geeraerts' (1997) diachronic analysis of prototypicality and Peirsman and Geeraerts' (2006) prototypical patterns of metonymy are outlined in the context of the Peirsman and Geeraerts (2006) and Croft (2006) exchange regarding whether metonymy's part-for-whole relation is one of association or contiguity. Secondly, using metonymy as the principle example, this paper proposes that communication is socially embedded through intersubjectivity and joint attention. Thirdly, it suggests the part-for-whole function of metonymy may also be similar to the whole-within-whole principle found in a *holon*. Fourthly, it proposes that this function is related to the dynamic complex systems principle of self-organization and that it acts to embody brain-body-environment triads. As such, the addition of more socially embedded and dynamically embodied grounding to metonymy's typical cognitive analysis in turn also suggests a similar triadic representation (i.e., dynamic socio-cognitive). Additionally suggested is that the understanding of prototypicality can benefit from being rendered as part of the dynamic process of the continuity of the mind, or as an *attractor landscape*. This paper concludes with the proposal that the socially embedded and dynamically embodied nature of metonymy's part-for-whole or whole-within-whole prototypicality is an instantiation of the ability to off-load cognition onto the environment.

Keywords: metonymy, prototypicality, embedded, embodied, cognitive, social, dynamic, intersubjective

1. INTRODUCTION

The socially embedded nature of language has recently been making strides into the understanding of language use and development. For example, Geeraerts, Kristiansen and Peirsman (2010) claim the basic architecture of language is recognized by cognitive linguistics as involving not just cognition, but socioculturally situated or embedded cognition. Additionally, Robinson (2010) found that a *socio-cognitive* approach enables researchers to trace flexibility step-by-step, or speaker-by-speaker, until seemingly “meaningless” individual variations actually show real development of meaning in time.

A view of cognition as embodied and embedded in brain-body-environment triads has also been gaining ground in cognitive linguistics (Gomila and Calvo 2008). Indeed, Feldman (2008) states that human language and thought are crucially shaped by the properties of our bodies and the structure of our physical and social environment. Moreover, abstract and metaphorical thought grows out of concrete everyday embodied experiences and grammar consists of neural circuitry pairing embodied abstract concepts with sound (or sign). In general, what is meant by embedded or situated is the role played in an agent’s behavior by its ongoing interactions with its immediate, in this case social, environment. Embodiment, in contrast, concerns the dynamic role of the physical properties of an agent’s body in its behavior (Beer 2008).

Dynamic approaches, which emphasize the temporal dimension of behavior and seek to apply the concepts and tools of dynamical systems theory to the analysis of agents, are as well influencing cognitive linguistics. As a result, usage events are being analyzed as to how they define and continuously redefine the language system in a dynamic way. Every usage event may then slightly redefine a person’s internal language system. As a dynamic point of departure, Spivey’s (2007) continuity of the mind thesis maintains that rather than focus on intermittent moments when the brain’s pattern of activity may be brushing up next to an identifiable discrete mental state or prototypical representation, it instead focuses on the continuous goal-oriented trajectory that the mind travels through when assessing the set of possible brain states. As we shall see in Geeraert’s (1997) diachronic analysis of prototypical semantics, a dynamic construal may be of benefit, especially in the context of metonymy.

This shift in descriptive format—from objects to events, from things to processes, as Spivey (2007) points out, has radical consequences for just about every conventional theory in the cognitive sciences. It means that the vast majority of the mind’s time is spent *in between* identifiable mental states rather than *in* them. Prototypicality may then be seen as the end result of a continuous dynamic process which may never actually be consciously or attentively attended to. It can then be accounted for in terms of neurological self-organization processes, not the postulation of explicit representations or static schemata (Gomila 2008).

From a dynamic complex systems framework (Gomila and Calvo 2008), a brain-body-environment triad as socially embedded and dynamically embodied views cognition as being:

- 1) situated
- 2) active
- 3) time-pressured in real-time (i.e., self-organizing)
- 4) one with the environment (i.e., organisms-environment systems are the proper units of analysis, not organisms as such)
- 5) off-loaded or schematized onto the environment

The remainder of the analysis of metonymy's prototypicality as socially embedded and dynamically embodied is presented in the following sections: diachronic prototype semantics, metonymy's prototypical patterns, metonymy as socially embedded, metonymy and holons, metonymy as dynamically embodied, examples of socially embedded and dynamically embodied metonymies, and off-loading cognition onto the environment.

2. DIACHRONIC PROTOTYPE SEMANTICS

Though not always in direct reference to metonymy's prototypicality, Geeraerts' (1997) analysis of diachronic prototype semantics nonetheless has many principles that can be applied to a prototypical analysis of metonymy, which, although a somewhat static depiction, does have dynamic elements that can also be enhanced from the application of a dynamic complex system perspective. According to Geeraerts (1997), a prototypical category shows an increasing flexibility. The core of which remains intact, but the fringe area grows and allows for broader and broader variation. From the core or nadir, prototypicality moves further from the center and around this hard conceptual core peripheral nuances arise. Prototypicality is therefore flexible enough to adapt to the continuous changes of context. It combines structural stability with flexibility. It does not change its overall structure to cope with new circumstances. Again, as we shall see, from this description the visualization of a prototypical category has much more in common with the understanding of a dynamic *attractor landscape* than with, perhaps, prototypical patterns.

Additionally, Geeraerts (1997) does note the dynamic nature of the synchronous notion of prototypical concept organization and recognizes that conceptual categories are not rigidly defined. Rather, he claims they combine a number of nuances through the centralizing action of a conceptual kernel or core, which implies the possibility of dynamically actualizing the prototypical concept in new peripheral uses. To sum up his perspective, the multiple possible actualities of a prototypical concept mark it as an inherently flexible, dynamic structure.

3. METONYMY'S PROTOTYPICAL PATTERNS

Peirsman and Geeraerts' (2006) analysis of metonymy stems from a view that there is conceptual contiguity between two relations within a domain or domain-matrix and they classify the core part-for-whole metonymical category into prototypical patterns (see Figure 1). Croft (2006), on the other hand, does not see the relation as contiguous but as associative.

This section takes up the Peirsman and Geeraerts (henceforth P and G)/Croft debate and discusses the cognitive exclusion of social factors from the analysis of metonymy. Following Ruiz de Mendoza Ibanez and Diez Velasco (2003), and Lakoff (1980), PART-FOR-WHOLE or WHOLE-FOR-PART summarizes the principle types of conceptual metonymies:

3.1. Domain Highlighting/Reduction

3.1.1. *We Have to Fill Up the Car with Gas*

The interpretation of the *car* as “gas tank of car” involves the highlighting of the domain of fuelling in the domain matrix of [CAR] as well as a constraint to the relevant part of the car. This is called *domain highlighting*, since the target-in-source metonymy makes a primary domain that is in the literal meaning.

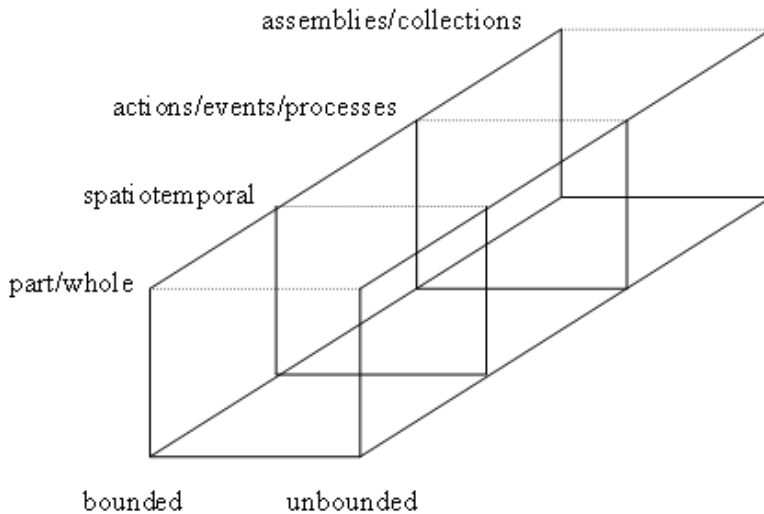


Figure 1. The prototypical category of metonymical patterns.

3.2. Domain Adjustment/Expansion

3.2.1. *The Ham Sandwich Wants a Side Salad*

In order to achieve the semantic coherence specified by the unity of domain, there often occurs an adjustment of the domains of the individual words in the construction. Domain adjustment is the other major factor for source-in-target metonymies.

3.3. The P and G/ Croft Exchange

Croft (2006: 320) states, “Contiguity is an inferior description of metonymy in comparison to association, the traditional definition of metonymic semantic relations, since contiguity unlike association implies a notion of spatial nearness, and we have seen that nearness is inadequate.” Indeed, it can be difficult to differentiate the meaning of *contiguity* and *association* as they can often be synonymous. Once the construct of intersubjectivity is introduced, however, the terms can be distinguished by making *contiguity* the social-contextual relation (i.e., the proximity or salience of the object in context) and *association* the cognitive process (i.e., metonymy as conceptual). When these cognitive and social relationships intertwine, it results in the part-for-whole linguistic metonymy that

syntagmatically develops from a relative clause (i.e., *the customer who ordered the ham sandwich*) which then becomes the subject of the sentence (i.e., *the ham sandwich wants a side salad*).

In the P and G/Croft exchanges, in order to argue for the associative position, Croft (2006) provided what he considered to be unacceptable examples of metonymy and these also illustrate how a broader social perspective of joint attention can assist in the acceptance of a metonym.

3.3.1. Location for Located

**The dining room ate dessert*

P and G observe that some of Croft's "ungrammatical" examples sound perfectly natural when they occur in an appropriate context. If you are throwing a big dinner party with hundreds of guests in various rooms, for example, you may very well say that the *larger dining room is already eating dessert, while the smaller is still at the main course*. Thus, the meaning or construal of the metonymy is also dependent upon the contiguous intersubjective or joint-attention focus between these interlocutors who are throwing the party. The construal also allows for the elision of *dining room* in the second instance to simply *smaller*. Context is elided to the most salient part and, hence, elision, similar to metonymy, influences how the cognitive association (i.e., PART-FOR-WHOLE) develops into a conceptual metonymy (e.g., ORDER-FOR-CUSTOMER). Additionally, it is this shared intersubjective context or a mutual assumption shared by the listener from the speaker's implication that determines whether the metonymy is acceptable or not.

The following are additional suggested contexts for other acceptable and unacceptable Croft examples:

PART-FOR-WHOLE

a) **I painted the drawer*. – The drawer in this example is intended to represent the desk. However, a drawer is not the intersubjective focus of a desk in that it could mean different things to different people. According to Ruiz de Mendoza and Mairal (2007), the Correlation Principle is violated here in that from the context the drawer is not of most relevance. Perhaps more to the point, this example may work better as an event metonymy rather than a referential one (Dirven 1999). Consider: *I drawered the document* as compared to **I desked the document*.

WHOLE-FOR-PART

a) *We have to fill up the car*. – "Gas" is the intersubjective focus here but, depending on the joint-attention focus, it would also be possible to fill the seats with people or the trunk with presents (cf. *The car is empty*). That is, whole-for-part could be used in different contexts.

b) **The house burned down*. [for just the dining room] – This example is similar to the unacceptable use of *desk*. However, in this case, the use of *down* indicates fully or completely and therefore what burned could not simply be a part of the house (cf. *The house burned*.) Furthermore, the intersubjective focus of a house is that it is generally understood to be a compartmentalized yet structurally intact unit; however, this is not necessarily the case with cities. Thus, whole-for-part may or may not be acceptable with a house, but is with cities (e.g., *L.A. is burning*).

CONTAINER-FOR-CONTAINED

a) **The glass is red.* – [for wine] In this case, one cannot say *The glass is red* to mean *The wine is red* because it could refer to the glass and hence have more than one meaning. But note that *red* can still be a metonymy in the following example: *The red is delicious* (i.e., PROPERTY-FOR-OBJECT).

The reasons why these metonymies are problematic but not necessarily unacceptable are that they could have more than one meaning, mean different things to different people, or mean different things in different contexts. The main point is perhaps that they are too literal and not embedded enough within a social context to be acceptable. Without some further form of socially embedded target-in-source figuration, it is difficult to associate the underlying target with the appropriate contiguous contextual source.

Other cognitive linguists have tackled whether the metonymic relation is a mapping of contiguity or association. Feyaerts (1999) opposes contiguity as the essential feature of metonymy because of different kinds of functional-associative relationships such as *cause-and-effect* and *object-property*. Consequently, he seems to prefer Croft's use of associative. However, there is a danger of circularity here in that cause-and-effect is one of the patterns found in P and G's prototypical definition which favors contiguity (see Figure 1). Blank (1999) distinguishes association and contiguity by introducing paradigmatic (i.e., associative) and syntagmatic (i.e., contiguous) relations. Blank (1999: 174) then stresses that metonymy has a clear-cut cognitive background, yet adds an intersubjective perspective to his explanation: "The only things speakers have to share are the same conceptual relations, common world knowledge about how life is typically organized and how the 'things of life' are interrelated. This makes metonymies very efficient tools for resolving different tasks in communication."

Other cognitive linguists prefer to analyze the target-in-source or source-in-target relation of metonymy in terms of pragmatics. Fauconnier (1997) states that the manipulation of space configurations in the absence of a real-world matchup would be no more than a "solipsistic" exercise were it not for the crucial implicit assumption that we know in principle how to match configurations. He assumes the real-world matchup involves a combination of pragmatic and grammatical factors that make the appropriate "domain type" accessible. Exactly how this occurs, however, he affirms is at present an unsolved (although unavoidable) problem. Yet, in context, he continues, there is no trouble in telling what the domain type is, although how it is, is still far from understood. From a sociocognitive perspective, Fauconnier's analysis suggests that how access to the appropriate domain type may be achieved between interlocutors is through their intersubjective perspective, which is socially embedded and which develops *shared* space configurations.

Gibbs (1994) and Barcelona (2007) advance the understanding of how domain types are schematized, or socially embedded, through the introduction of *scenarios*. People metonymically utilize subparts of, for example, a restaurant ordering scenario in order to stand for the whole scenario. Listeners, having internalized the scenario, readily recognize that speakers intend them to understand the entire scenario when one subpart of it is stated, because, according to Gibbs, they share the same cognitive model, or perhaps prototypical patterns. Song (1998) demonstrates how the joint focus of a metonymy can function deictically, similar to the gesture of pointing. For instance, in actual conversation, deictic pointing can be achieved when the metonymy acts as a subject: *The ham sandwich wants a side salad*. Song's analysis also includes the perspective of the listener in that the use of a

metonymy may encourage the listener to search for further contextual effects. The reference of *the ham sandwich* to the customer may for instance also have the social implication that the speaker intends to make manifest an assumption in the listener that he is looking down upon his customers, which also assumes the showing of some intimacy towards the listener. According to Song, the embedding of this kind of affective mutuality between interlocutors outweighs the extra processing effort incurred by the use of the metonymy. *The ham sandwich* metonym then represents a specialized lexicon for the socially embedded joint activity found in a restaurant. Clark (1996) adds that every discourse community has a specialized lexicon of which metonymy may play a significant role.

Clark (1996) utilizes *equity theory* to make the point that when people find themselves in inequitable situations (e.g., as a server), they feel distress and the more inequitable the situation, the more distress they feel. To eliminate this distress they are motivated to restore equity. By equating customers with their orders, the server depersonalizes the customers and restores equity or saves face from having to serve them. The metonymy also works to exclude the customer from what Clark (1996) calls “inside information” and in this sense at least two different discourse communities exist in restaurants (i.e., between the staff and between the staff and customers). Therefore, the frequent usage of metonymies is also an indication of different socially constructed and embedded discourse communities.

Since *the ham sandwich* can be a property that characterizes the customer most effectively to the server, Seto (1999) suggests that it is one of the reasons that prompt some scholars to adopt a broader, possibly more social, definition of metonymy. Additionally, Warren (1999) provides an insightful perspective in that it should not be forgotten that metonymy is a kind of semantic-syntactic construction, comparable to, for instance, compounding and genitive constructions, which a language user has to learn to interpret and form to reach full competence. In this sense, metonymy construction and usage is more than a cognitive function; it is also a necessary component of sociocultural communicative or interactive competence.

Kovecses and Radden (1998) clearly state the need for the addition of a social factor in the analysis of metonymy, although their analysis also highlights the need to find commensuration between cognitive and social views: “some prototypical forms of metonymies may ‘default’ for social, communicative or aesthetic reasons.” Social considerations in a communicative situation, they continue, may require speakers to “override” some cognitive principles. The goal of establishing sociocognitive bases for metonymy, contrastively, is to argue that what is occurring is not defaulting or overriding. It is simply necessary to learn how these cognitive and social principles interact and to find commensuration between them because metonymy’s analysis cannot be fully explained by only one or the other view. Both are required. Indeed, it may not be possible to analyze metonymy without the use of both of the terms *association* and *contiguity*. To sum up this section, in terms of metonymy this paper views *contiguity* as spatiotemporal and actions/events processes (i.e., body) and *association* as cognitive part-for-whole processes (i.e., brain). In this sense, both association and contiguity are necessary for a metonymy’s acceptability and it is both the cognitive and social nature of communication in context which establishes awareness of the underlying implication of a metonymy and which disambiguates the variations in its interpretation, leading to its acceptability.

4. METONYMY AS SOCIALLY EMBEDDED

Since metonymy's prototypical patterns cannot be simply viewed as the internal workings of only one individual, both a joint-attention frame and intersubjectivity are useful to explain how these patterns work in context so that multiple interlocutors are able to attune to the intentions of others. A joint-attention frame involves triadic interaction mediated by an object in which two participants constantly monitor one another's attention to it and themselves (Tomasello 2003). To illustrate, when considering the case of the *ham sandwich* metonymy, the *ham sandwich* grammatical subject as a reference to a customer is much more likely to be used between two waiters or a waiter and a cook because of the salience of the *ham sandwich* object which passes between them and which then becomes socially embedded into their context. Possibly as a result of mirror neuron activation (Gallese 2003), intersubjectivity concerns practices that involve a perceptual sense of others and that constitute a common bodily intentionality shared by both the perceiving subject and the perceived other (Gallagher 2008). In the case of the *ham sandwich* metonymy, it represents the abstracted (i.e., ORDER-FOR-CUSTOMER) part-for-whole result of an embodied joint-attention frame (see Figure 2). If the waiter implies the *ham sandwich* metonymy in reference to the customer because they are contiguous to both the order and customer then the cook assumes the association between the customer and her order.

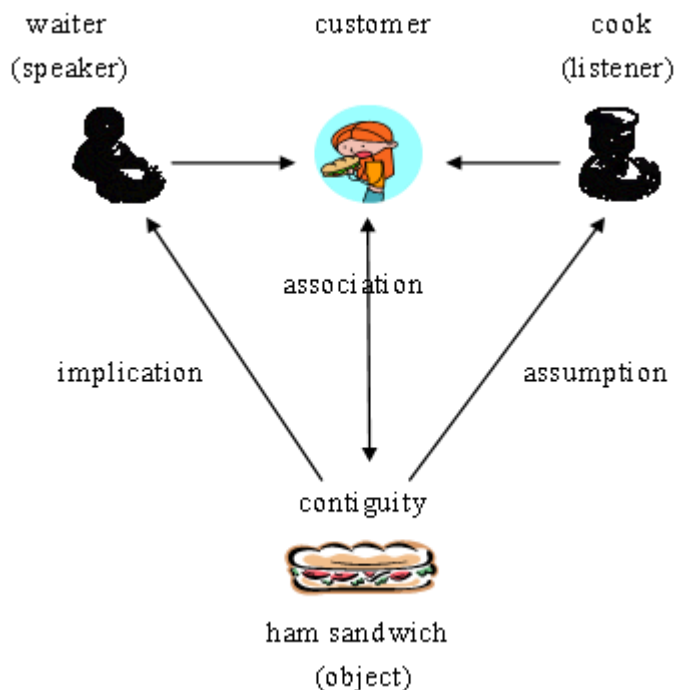


Figure 2. The ham sandwich joint-attention frame.

According to Nunberg (1995), the description of these mechanisms is fundamentally a linguistic problem, rather than a problem of conceptual analysis. Cases like this, he continues, can be thought of as “occurrent metonymies,” where the relation between two domains can

only be exploited in a restricted range of situations or environments (e.g., a restaurant or kitchen). That metonymy is a syntagmatic rather than conceptual relation can be suggested in the sense that to the waiter the price of a ham sandwich might be more salient if it is written on the bill along with the order, making the association between the customer, the order and the bill also that much more linguistically relevant (Sperber and Wilson 1986).

In this sense, the price may attract both customer and order and create their syntagmatic relationship. Indeed, *the ham sandwich* cannot stand on its own as a metonymy. It gains its meaning from the syntagmatic construction (Goldberg 1995). With other metonymic constructions, for example, *Nixon bombed Hanoi*, the bombing of Hanoi associates, attracts, or relates the *Nixon* metonymy with the US government. Rommetveit's (1992) sociocultural dialogically-based approach to communication and human cognition can be advantageously applied to metonymy. Two of his main principles are that a dyadic state of intersubjectivity with respect to some context is attained by verbal communication when:

- 1) some aspect is brought into focus by one participant and, as a consequence, jointly attended to by both of them (e.g., a *ham sandwich*)
- 2) when both participants take it for granted that each of them assumes the other to hold that implication (e.g., ORDER-FOR-CUSTOMER)

Both of these principles are realized through metonymy usage as a result of a shared intersubjective joint-attention frame in a socially embedded context. Figure 3 illustrates an embedded sociocognitive approach to metonymy in that P and G's prototypical patterns are not only cognitive (i.e., the box within self and other) but contextual and the joint-attention frame has also been socially embedded into the contextual environment. The joint-attention frame is in bold type and the contextual prototypical patterns are not.

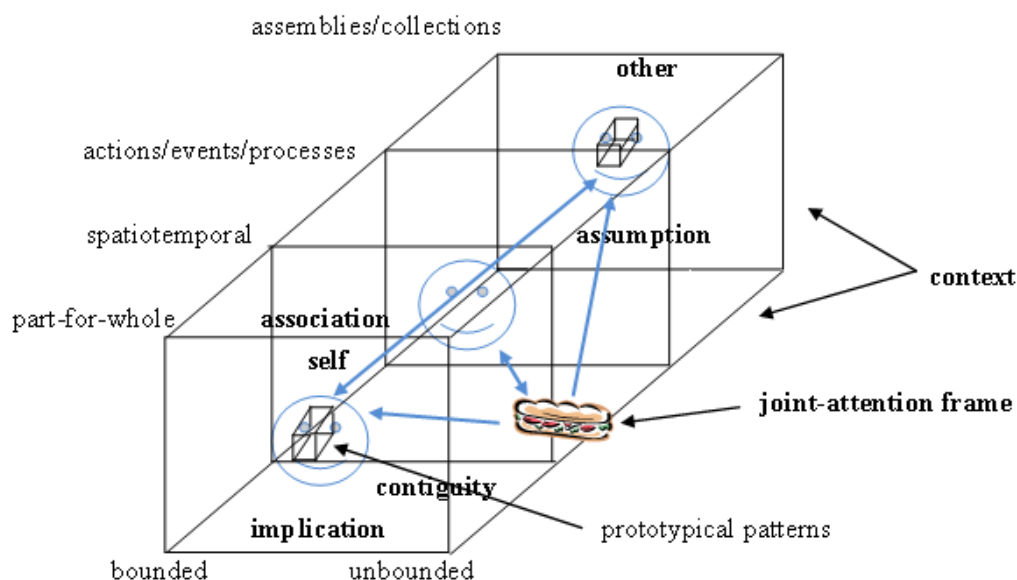


Figure 3. An embedded sociocognitive analysis of metonymy.

5. METONYMY AND HOLONS

This section introduces the concept of a *holon* as a possible method to overcome the vagueness of the concept of a *domain*. By replacing or merging a holon with a domain and then mapping prototypicality patterns onto it, it is possible to form a hypothetically or intuitively more neurologically plausible dynamic complex system. A holon is a whole that is a part of other wholes. For example, a whole atom is part of a whole molecule; a whole molecule is part of a whole cell; a whole cell is part of a whole organism; and this whole-within-whole inter-connected network develops and extends throughout the universe. Reality is composed of neither wholes nor parts, but of whole/parts, or holons (Wilber 2001). Thus, metonymy, which is typically considered to be a part-for-whole or whole-for-part relation, might also be considered as a conceptual and linguistic instantiation of this whole-within-whole developmental network (cf. taxonomy and partonymy)—or as a holon. In this sense, association and contiguity as well as a balance between them are both necessary in the analysis of metonymy in order to fully express a whole-within-whole relation. Each successive contiguous whole-within-whole level evolves in time into a more complex level, which is what occurs through association (e.g., ORDER-FOR-CUSTOMER). In Figure 4, P and G's prototypical patterns have been mapped onto a five-level holarchy. To illustrate whole-within-whole as opposed to part-for-whole, in the context of the metonymy *head of the company*, we can only speak of the whole head and not the top part of the body. In this sense, it is a whole-within-whole metonymy.

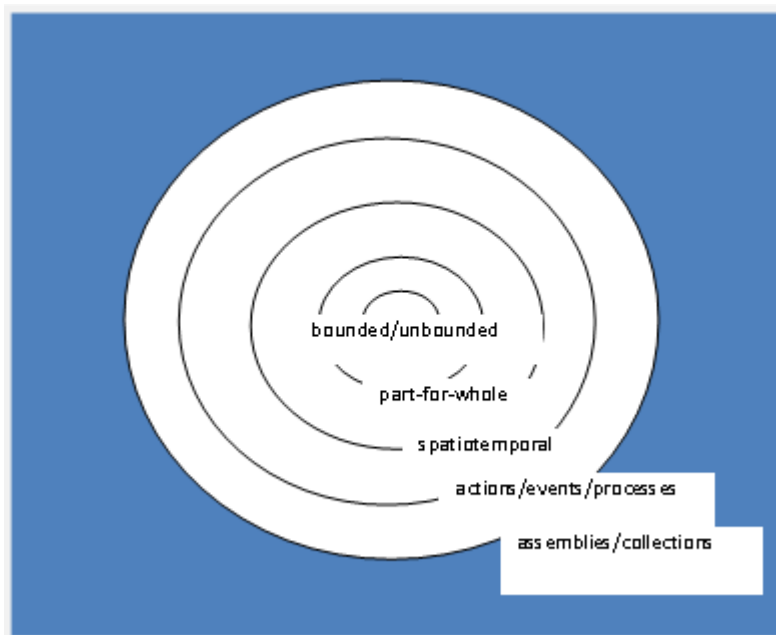


Figure 4. Mapping prototypical patterns onto a holon.

5.1. Socially Embedding and Dynamically Embodying a Prototypical Pattern Hierarchy

In this section, we further embed and embody the five-level prototypical pattern holarchy within a brain-body-environment triad (see Figure 5). This results in a six-level holarchy (i.e., matter, brain, body, activity, social and environment). The prototypical patterns can then be mapped onto five of the six levels:

- 1) matter (i.e., bounded/unbounded)
- 2) brain (i.e., part-for-whole)
- 3) body (i.e., spatiotemporal: physical and emotional)
- 4) activity (i.e., actions/events/processes)
- 5) social (i.e., inter-subjective)
- 6) environment (i.e., assemblies/collections: inter-objective)

From the direction of the arrows in Figure 5, it can be seen that socially embedding is an internalization process through usage and dynamically embodying is an externalization process creating greater complexity. Prototypicality is the end result these of internalizing embedding and externalizing embodying processes.

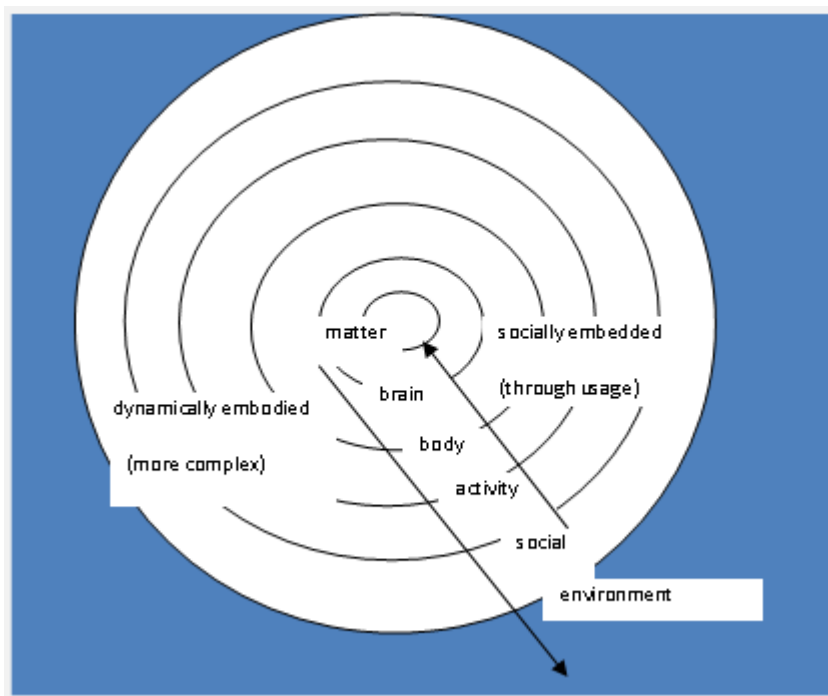


Figure 5. An embedded and embodied brain-body-environment holarchy.

6. METONYMY AS DYNAMICALLY EMBODIED

The final concept to complement and provide further hypothetical neurological plausibility to the brain-body-environment holarchy is the concept of an *attractor landscape*. The notion of a trajectory through an attractor landscape is at the heart of Spivey's (2007) continuity of the mind thesis. The mediating representational space between sensory input and motor output is one that generates a continuously dynamic trajectory. The emphasis is on the journey, the process, the activity, not the destinations or objects. His thesis allows for the conception of intermediate regions in the trajectory that are visited *on the way* toward an attractor basin that approximates some interpretable pure mental state or what might possibly be considered a domain.

An attractor is a region of a system's state space into which the system tends to move (Larsen-Freeman and Cameron 2008). Within the brain-body-environment holarchy, this would involve attracting the trajectory to a part-for-whole or whole-within-whole relation between two of the six levels.

The closest this trajectory might come to prototypicality in Geeraerts' (1997) sense within an attractor before changing trajectory would be to brush up near its basin just long enough to bring that attractor's percepts and actions into prominence (see Figure 6 for a hypothetical depiction of an attractor landscape). In Figure 6, the smaller basins represent exemplars. The nadir or core of the large basin is the prototype or the "best" example of the concept, which may not even correspond to any object that has actually been experienced (Spivey 2007). Intermediate regions along the continuous trajectory are where most of mental life is spent not in easily labeled static mental states or domains.

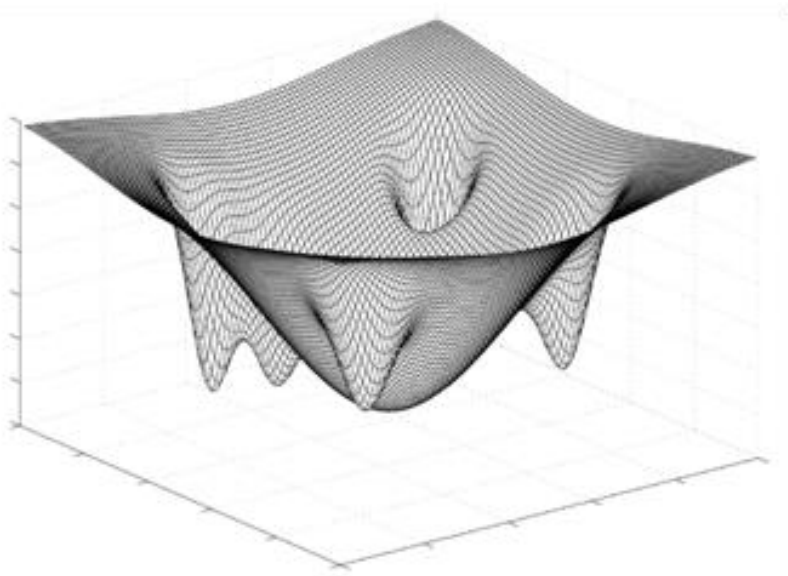


Figure 6. A hypothetical attractor landscape blending prototype and exemplar accounts.

This dynamic depiction of an attractor, however, as opposed to a static depiction of prototypical patterns, does allow for the flexibility and peripheral instances found in Geeraerts' (1997) diachronic prototype semantics.

In self-organization, the system selects or is attracted to one preferred configuration out of many possible states, but behavioral variability is an essential precursor (Thelen and Smith 1994). Self-organization is the spontaneous creation of more complex order or activity; the result of which is a more complex structure which was not planned or managed by an outside source (Larsen-Freeman and Cameron 2008).

From a communicative context, PART-FOR-WHOLE and WHOLE-WITHIN-WHOLE are fundamental examples of self-organization cognitive processes which are also fundamental to the manifestation of metonymies. Seen from this dynamic complex systems perspective, prototypicality once again then represents not an initial state but the result of a combination of a continuous trajectory and dynamic self-organization processes.

6.1. A Metonymic Brain-Body-Environment Holarchy as an Attractor Landscape

The depiction of metonymy within a dynamic attractor landscape has made it possible to incorporate some of the dynamic elements from Geeraerts' (1997) diachronic analysis of prototypicality, which can adapt to continuous changes in meaning, and it has also removed some of the non-dynamic elements from P and G's prototypical patterns. As P and G (2006) note, a unitary definition of metonymy in terms of a semantic shift within a "domain" or a "domain-matrix" is far from unproblematic, given the relative vagueness of the concepts of domain and domain-matrix. Indeed, their prototypical patterns can also resemble what might be considered to be a domain-matrix, which unfortunately does not aid in reducing how domains are problematic. A dynamic depiction, on the other hand, though hypothetical, attempts to be more neurologically plausible at least intuitively.

Figure 7 shows a rudimentary mapping of the metonymic brain-body-environment holarchy onto an attractor landscape.

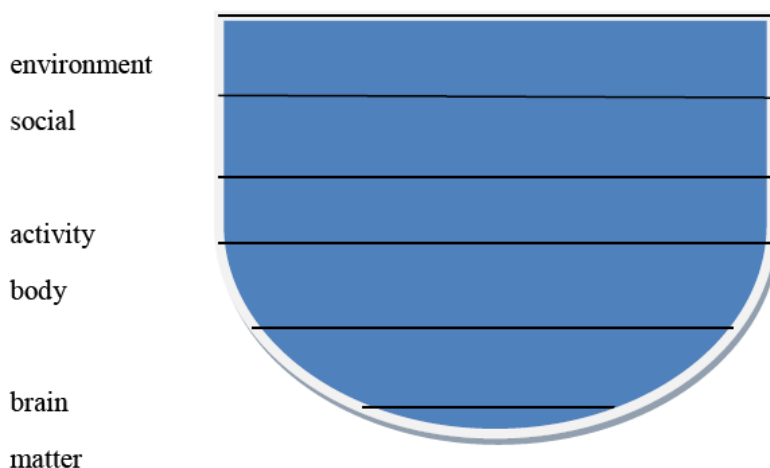


Figure 7. The brain-body-environment holarchy as an attractor landscape.

If we now attempt to map P and G's (2006) prototypical patterns onto the attractor landscape, bounded/unbounded (i.e., matter) could be found at the base of the attractor, which

allow for nuances in meaning (e.g., mass vs. count nouns). The part-for-whole pattern (i.e., brain) can be seen as the fundamental process of self-organization within the nadir of the large basin. Spatio-temporal patterns (i.e., body) are combined without distinction within the attractor landscape. Events/actions/processes (i.e., activity) are the result of the internalization of brain-body-environment triadic processes represented by the cause-and-effect trajectory in an attractor landscape.

Finally, collections/assemblies (i.e., environment) develop from the holarchical organization within the attractor landscape (e.g., exemplar or basic, super-, and sub- category levels). All of the levels together represent a whole-within-whole dynamic complex system. In general, then, a continuous trajectory through a brain-body-environment holarchical attractor is what is intended by the terms socially embedded and dynamically embodied.

7. EXAMPLES OF SOCIALLY EMBEDDED AND DYNAMICALLY EMBODIED METONYMIES

This section briefly provides examples of metonymies to support the view that it is the interaction of cognitive, social and dynamic factors in a brain-body-environment holarchical attractor that manifests metonymies and motivates metonymic constructions and that this interaction provides a better more inter-theoretical explanatory power to the analysis of metonymy. As Beer (2008) correctly points out, it is becoming increasingly clear that situatedness (i.e., embeddedness), embodiment and dynamics work much better as a unit. Combining these three areas leads to the notion of a brain-body-environment system, wherein an agent's nervous system, its body, and its environment are each conceptualized as dynamical systems that are in continuous interaction. Apart from the first level which is pre-embodied or pre-embedded, example metonymies from Lakoff (1980), Littlemore (2009) and the author are provided for each of the remaining five levels of the brain-body environment holarchical attractor:

1. Matter (i.e., bounded/unbounded)

- (1) mass vs. count nouns
- (2) present tense vs. progressive aspect

2. Brain (i.e., part-for-whole)

OBJECT FOR INTELLIGENCE (OR LACK THERE OF)

- 1) Grey matter
- 2) Noodle
- 3) A no-brainer

3. Body (i.e., spatiotemporal)

BODY PART USED FOR USER

- (1) Head of the company
- (2) A good hand
- (3) The eyes and ears of the company
- (4) Face time

OBJECT USED FOR USER – Embodied externalization from body

- (1) The sax has the flu today.
- (2) We need a better glove at third base.

EMOTION AS TEMPERATURE– Embedded internalization from environment

- (1) He gave me the cold shoulder.
- (2) She's hot under the collar.

4. Activity (i.e., actions/events/processes)

THING FOR THE ACTION – Embodied externalization of body

- (1) Legging it
- (2) Elbowing someone out of the way

ACTION FOR PERSON – Embedded internalization of action

- (1) Driver
- (2) Singer

5. Social (i.e., inter-subjective)

POSITION FOR SOCIAL STATUS – Embodied externalization of body

- (1) The man wants to see you now.
- (2) The suits who are in charge
- (3) Girl Friday

PEOPLE RESPONSIBLE FOR INSTITUTION

- (1) Nixon bombed Hanoi.

6. Environment (i.e., assemblies/collections: inter-objective)

ENVIRONMENT FOR THE INSTITUTION

- (1) Wall Street is in a panic.
- (2) If the upstairs don't get you the downstairs will.

Of note, level three (i.e., body) has both physical and emotional levels. Many ways of expressing emotion with metonymies seem to stem from the environment (e.g., TEMPERATURE-FOR-EMOTION). Again, each level extends to or dynamically embodies the next higher one creating greater complexity and each level is also socially embedded to the next one lower through usage.

Indeed, the manifestation of metonymy is then better seen as the result of more efficient brain-body-environment activity between interlocutors. Part-for-whole patterns (i.e., cognitive brains) interact with spatiotemporal patterns (i.e., socially embedded bodies) which in turn interact with actions/events/processes patterns (i.e., dynamically embodied environments). Hence, both cognitive-social-dynamic and brain-body-environment are similarly triadic and necessary to reveal how the manifestation of a conceptual-linguistic-activity metonymy is the result of more efficient part-for-whole or whole-within-whole self-organizing processes and the metonymy itself is in most contexts a more efficient method of expressing meaning. In the case of the *ham sandwich*, if the name of the customer in question is known to the restaurant personnel, then it might be more efficient, especially if more than one ham sandwich has been ordered, to refer to the customer by his or her name rather than

by the ORDER-FOR-CUSTOMER metonymy. Without knowing the customer's name, however, it is more efficient to rename the customer with his or her order similar to a deictic or genitive function. Referring to the customer by their order then requires less cognitive effort on the part of the waiter. In this sense, cognition has been off-loaded onto the environment.

8. OFF-LOADING COGNITION ONTO THE ENVIRONMENT

The final assertion stated in this paper is that the socially embedded and dynamically embodied nature of metonymy's part-for-whole/whole-within-whole prototypicality is an instantiation of the ability to off-load cognition onto the environment. If one sees the situation and what the agent is doing in it, and how the agent is doing it, and what the agent is expressing (e.g., through his or her gestures and style of movement), and this perception is already informed by one's own interaction with them and others, as well as by previous situated experiences, habitual ways of understanding, and cultural norms and established practices, then in cases in which one encounters normal ordinary engagements the work of understanding is already sufficiently accomplished and one does not have to go any further (Gallagher 2008).

One then does not have to start thinking about what might be going on in the other person's mind since everything one needs for understanding him or her is there in his or her action and in the intersubjective shared world—and metonymies reinforce this shared understanding in action through their more efficient syntagmatic construction.

This contiguous activity between interlocutors assists in dynamically embodying the environment as part of the mind. These patterns of activity and discourse are inter- and intra-cognitively internalized and externalized in a dynamic brain-body-environment holarchical attractor.

The utilization of these cognitive tools into brain-body-environment triads blurs the line between social embeddedness (i.e., co-interaction in the environment perform processes of cognition) and dynamic embodiment (i.e., the body's sensors help perform cognition processes) which in turn allows for them to be off-loaded onto the environment. A cognitive "schematization" of the environment in a part-for-whole or whole-within-whole pattern is the result of this more efficient activity between brain-body-environment triads, which is abstracted in language and used as a metonymic form of expression. Cognition as socially embedded and dynamically embodied onto the environment means the information found in a metonymy may not always cognitively represented (Gomila and Calvo 2008). Instead, the construction or syntagmatic context can be counted on to imply some of the meaning. This metonymic network represented in off-loaded cognition onto a schematized environment thereby facilitates minds that are quite possibly larger than themselves.

8.1. Brain-Body-Environment Schematization

From a brain-body-environment perspective, it is not the mind which contains schemata as such. Instead it is the brain-body-environment triad, especially the environment, which becomes schematized according to a particular embedded and embodied perspective. For

instance, it is the restaurant or kitchen which is schematized or designed to function more efficiently and the *ham sandwich* (i.e., ORDER-FOR-CUSTOMER) represents a part-for-whole/whole-within-whole shared understanding from co-action between interlocutors in this efficiently schematized environment.

Similar to prototypicality, this environment must, however, still remain dynamic and be continuously adapting to changes in meaning to allow for more efficient methods of activity.

This is what is continuously happening when goal-directed self-organizing cognitive processes are off-loaded to schematize the environment, and metonymic expressions reflect this increased efficiency through their economical use of language to convey more concise meaning. Citing another example, with *The Times hasn't arrived at the press conference yet* the press conference has been schematized according to the different newspapers or publications attending the conference.

9. DISCUSSION

The mind is on a continuous and dynamic goal-directed path in both a concrete (e.g., food or shelter) and abstract (e.g., love or thought) sense. Abstract or metaphorical thought grows out of concrete everyday embodied experiences. The mind, apart from dynamic self-organizing processes and brain-body-environment holarchical attractors, does not necessarily require schematization because of its forward-looking goal-directed trajectory. It remains on its continuous trajectory rarely visiting what might be considered actual schemata or prototypicality but nonetheless motivating and manifesting metonymies.

This embedded and embodied orientation to cognition is what computational theories of language development should also possibly adopt. Computational theories of language development could utilize the brain-body-environment triad and be goal-directed in nature with action sequences that have schematized environments in order to more efficiently achieve a developmental goal.

Metonymy is always motivated by intersubjective principles of self-organization to create more efficient meaning in communication similar to the more efficient activity found in the environment. A metonymic construction is typically literal with only the metonym being used figuratively.

The levels of the brain-body-environment holarchical attractor are used to associate the figurative implication of the metonymy from the literal construction. These levels may also come into play with metaphor. In a further attempt to overcome some of the vagueness in regards to the term “domain,” Figure 8 illustrates how metaphor might also be depicted as the interaction of two brain-body-environment holarchical attractors.

Along with the terms *source* and *target* for metaphor, other cognitive linguistics terms such as *figure* and *ground* and *encyclopedic knowledge* are also compatible within the trajectory of one or more metonymic brain-body-environment holarchical attractors.

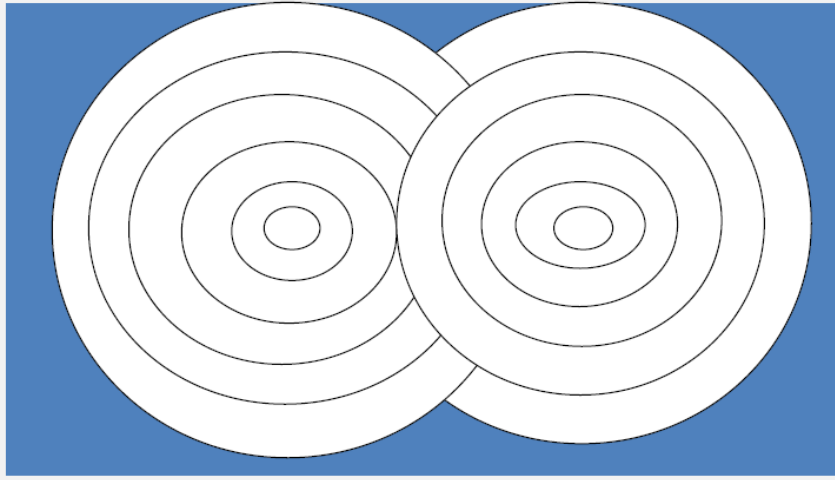


Figure 8. Brain-body-environment holarchical attractors and their relation to metaphor.

CONCLUSION

This paper views metonymy as a means of communicative expression representing shared understanding in language which developed from more efficient co-activity in the environment. Using metonymy and prototypicality as its principle examples, it has looked at communication from a dynamic sociocognitive perspective which attempts to establish that the cognitive analysis of communication benefits from being seen as socially embedded through intersubjectivity and joint attention and dynamically embodied through brain-body-environment triads. It views both terms association and contiguity as necessary in the analysis of metonymy. It introduced the concept of a whole-within-whole holon as a possible addition to metonymy's typical part-for-whole or whole-for-part analysis and it attempted to map P and G's prototypical patterns as well as a brain-body-environment triad onto it to create a brain-body-environment holarchical network. It has also attempted to construe prototypicality in dynamic terms of attractor landscapes, resulting in a brain-body-environment holarchical attractor. It has furthermore suggested that a cognitive-social-dynamic triad offers greater hypothetical neurologically plausibility to the explanatory power of the analysis of metonymy.

It concluded by proposing that this perspective allows cognition to be off-loaded onto the environment and by so doing the environment becomes schematized according to self-organizing inter-connected activity.

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Chapter 82

PERCEPTION OF EMOTIONAL INTERJECTIONS

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ABSTRACT

The main question addressed is whether emotional prosody of interjections, which show a non-arbitrary – indexical – relation between expression and meaning, could be integrated in the lexical representation, and whether this differs between high-lexical interjections and low-lexical interjections. Swedish high-lexical interjections have a more defined semantic content and can be understood without prosody, for example, hurrah, while low-lexical interjections are more ambiguous and can't be understood without the appropriate prosody, for example, oh. Lexical decision experiments were performed with high-lexical and low-lexical interjections having matching or mismatching prosody. The main hypothesis is that mismatch will slow down reaction times, especially for the low-lexical interjections.

The results of the experiments show that (a) stimuli with mismatch between lexical content and emotional prosody were recognized more slowly than matching stimuli, (b) low-lexical interjections were recognized more slowly than high-lexical interjections in mismatching conditions. The stimuli words were analysed acoustically with regard to F0 variation and duration, to pinpoint whether differing reaction times are dependent on acoustic variables or whether they depend on the mismatch condition as such. The comparison between the reaction times and the acoustic analysis shows that (c) reaction times are partly dependent on the specific emotion: different emotions have different durations and reaction times. However, the durations were not correlated with reaction times in matching and mismatching conditions.

The conclusion is that it is the mismatching prosody as such which affects reaction times, and that low-lexical interjections are affected more by mismatch than high-lexical interjections. It is further claimed that low lexical interjections with different emotional prosodies are in fact not homonymous, or polysemous, but that they can be seen as different morphemes since they have different meanings and different forms. Interjections have a certain degree of emotional-prosodic specification in the lexical representation and emotional prosody is part of the phonological representation. Emotional prosody is thus part of the linguistic system, at the same time as the lexicon is not separated from other cognitive and communicative abilities, such as understanding and expression of emotional prosody in general.

Keywords: prosody, emotions, interjections, word recognition

1. INTRODUCTION

A special case of non-arbitrariness in language is emotional prosody. Emotional prosody is always present in interjections. The non-arbitrary relation between prosodic expression and meaning in emotional interjections is mainly indexical; the expression is caused by a bodily or mental reaction, but the prosody is also modified by language conventions. Emotional prosody is also partly similar in the world's languages (Abelin and Allwood 2002; Sauter et al. 2009).

To penetrate the question of the status of emotional prosody in interjections, two main types of interjection were studied: high-lexical interjections, having a more defined semantic content, for example, *hurrah*, and low-lexical interjections, which have a more vague semantic content, for example, *oh*. The meaning of a high-lexical interjection can be understood without hearing the prosody (e.g., in reading the interjection), while the meaning of a low-lexical interjection cannot. There are several possible interpretations of, for example, the phoneme string represented in writing by *oh*; with certain prosody it expresses sadness or disappointment, but with another prosody it expresses surprise. Could it therefore be the case that the prosody of low-lexical interjections belongs to the lexical representation, while this is not valid for high-lexical interjections?

The general question to be investigated is thus whether prosody of an interjection could be coded in the lexical representation or if it is more loosely connected to it, that is, added by processes at a higher processing level. The question is also whether different reaction times of lexical decisions are decided by the acoustic variables F0 variation or duration of the interjections and thus could be explained by different input, or, whether reaction times are decided by the mismatch condition.

The questions were investigated by performing lexical decision experiments with interjections having matching or mismatching prosody, in order to get at the role of prosody when listeners are interpreting interjections.

Hypotheses

Mismatch will slow down reaction times more for low-lexical interjections

Low-lexical interjections were recognized more slowly than high-lexical interjections in mismatching conditions.

Low-lexical interjections will be reacted to more quickly than high-lexical interjections

The stimulus words used in the lexical decision experiments were analysed acoustically. The results of the acoustic analysis were then analysed in relation to the outcome of the lexical decision experiments.

2. BACKGROUND

Sekiguchi and Nakajima (1999) found, in a priming experiment, that the prime activated only the representations of prosodically congruent words. They therefore concluded that Japanese listeners use lexical prosody for lexical access of their language and that the role of lexical prosody is determined language-specifically. The results of Sekiguchi (2006) suggest

that the constraint of lexical prosody is not so strong, but is affected by the factor of word-relative familiarity. The argument goes like this: What type of information constrains the activation of candidate representations in word recognition? Many models of spoken word recognition assume that the activation of word representations is constrained by segmental features of speech input. Although it is highly probable that the segmental feature is used for candidate activation, every word also has other features, for example, suprasegmental, prosodic features, which are given by pitch contour, amplitude contour, or temporal variation across segmental features. One of these is lexical prosody, and lexical prosody is therefore a possible constraint on candidate activation in lexical access of spoken word recognition. Other studies which suggest that word prosody is represented in the mental lexicon were made by e.g., Lindfield, Wingfield and Goodglass (1999).

The subject of emotional prosody being integrated in the lexicon has been studied by e.g., Nygaard and Queen (2008) who investigated the role of emotional tone of voice in the perception of spoken words and the question of emotional prosody being non-linguistic in nature or being integrated with the semantic content of spoken language. Listeners were presented with words that had either a happy, sad, or neutral meaning. Each word was spoken in a tone of voice (happy, sad, or neutral) that was congruent, incongruent, or neutral, and naming latencies were collected. Tone of voice was either blocked or mixed with respect to emotional meaning. Their results suggest that emotional tone of voice facilitates linguistic processing of emotional words in an emotion-congruent fashion. This suggests that perception of spoken words is not independent of the perception of emotional prosody, and that the integration of emotional tone of voice with linguistic content occurs during lexical processing. Similar conclusions are drawn by Wurm et al. (2012) in a study on sentences spoken in different tones of voice, with lexical decision tasks on sentence final emotionally congruent or incongruent words. They found that reaction times for congruent trials were faster than those for incongruent trials.

Nygaard and Lunders (2002) investigated the effects of emotional tone of voice on the perception of word meaning. In two experiments, listeners were presented with emotional homophones that had one affective meaning, happy or sad, and one neutral meaning, e.g., *flower/flour* (happy and neutral), *die/dye* (sad and neutral). In both experiments, the listeners were asked to transcribe the emotional homophones presented in three different affective tones—happy, neutral, and sad. The results showed that the listeners provided more affective than neutral transcriptions when the tone of voice was congruent with the emotional meaning of the homophone. They suggest that emotional tone of voice affects the processing of lexically ambiguous words by biasing the selection of word meaning.

Dietrich et al. (2006), in a study on German interjections, found that listeners classify data into two categories, interjections with high or low lexical information; the latter of these is more ambiguous than the first. They had participants respond to the question ‘Which emotion was expressed by the utterance?’ Participants heard stimuli spoken with a neutral tone and responded by pressing one of 5 buttons, thereby rating the utterances as neutral, happy, angry, disgusted, or sad. (This was not a reaction-time experiment.) The experiment resulted in percentage ratings of the stimuli in terms of emotional recognition rates for different emotional interjections, spoken in a neutral tone, and aimed at isolating the emotional lexical meaning of the words. In this way the distinction high-lexical interjections and low-lexical interjections was established. High-lexical interjections convey emotions by lexical as well as prosodic factors, while low-lexical interjections convey emotions mainly by

prosody. In another experiment stimuli spoken with congruent or incongruent prosody were compared with each other. Again the question was ‘Which emotion was expressed?’ and the listeners had to assign one of the four emotional categories happiness, anger, sadness, or disgust. In case of stimuli with incongruent prosody, correct identification of either the lexical or the prosodic meaning counted as a correct answer. Both high-lexical interjections and low-lexical interjections showed a higher percentage of correct judgements when spoken with congruent prosody compared with stimuli spoken with incongruent prosody. High-lexical items showed a stronger effect than low-lexical items, which the authors interpret as due to reduced lexicality of low-lexical interjection stimuli. Another analysis showed that prosodic cues yielded correct judgements more often than lexical information, and more so for low-lexical interjections. Metcalfe et al. (2009) performed perceptual ratings experiments, and they also found that listeners classify English interjections into interjections with high or low lexical information. Participants listened to the interjection stimuli and categorized them as positive or negative, by pressing either of two keys. (Thus, it was not a lexical decision experiment.) The results were that responses to ambiguous interjections (low-lexical interjection) took slightly longer than for unambiguous utterances (high-lexical interjections). However, the reaction times for utterances spoken with neutral list intonation were even longer. Neutral list intonation could be compared with a mismatching condition. The general question of whether semantic complexity is reflected in processing time has been affirmed by, for example, Gennari and Poeppel (2003) in a study on verb meanings. Lupker (2007) reviews the issue of processing of ambiguous words. Many studies have found an ambiguity advantage in lexical decision experiments on written stimuli (e.g., Forster and Bednall 1976; Gernsbacher 1984), while later studies have found an ambiguity disadvantage in lexical decision experiments with spoken stimuli (Rodd et al. 2002). Klein and Murphy (2001, 2002) suggest, from priming experiments, that different senses of a word are represented more distinctly in memory than word forms such as orthography or phonology.

Corpus analyses of Swedish prosodic emotional expressions in relation to lexical meaning (Abelin 2010) suggested that the lexical meaning of some interjections (i.e., the low-lexical interjections) could not be determined without prosody; many ambiguities exist in written form (without prosody), but not in the spoken form(s). These studies converge in the possibility that emotional prosody is integrated in lexical processing. Studies on ambiguity show that there could be different processing times for high-lexical and low-lexical words. Several studies show that emotional prosody affects word processing. If low-lexical interjections are affected more by mis-matching prosody, in the present study, this could show that emotional prosody has a position within the lexicon.

The Swedish Low-Lexical and High-Lexical Interjections of the Study

Typical low-lexical interjections are the following. The grapheme string is given followed by the appropriate, disambiguating prosodies.

ah: anger, happiness, disgust

åh: happiness, sadness

äh: anger, disgust

öh: disgust

These are then eight different low-lexical interjections. To repeat, the meaning of low-lexical interjections can't be determined without hearing the prosody; the phoneme string is not sufficient. However, it must be added that low-lexical interjections are quite dependent on context, in a wide sense, for their interpretation. Examples of high-lexical interjections are the following: *hurra* (yippee), *usch* (yuk), *tjoho* (yippee), and *ack* (sadness).

The words that were counted as low-lexical interjections were, on the basis of ambiguity, partly confirmed by lexicon definitions (Nationalencyklopedins ordbok – The dictionary of the Swedish Academy 1995), partly in comparison with the emotional recognition rates of similar words in German (Dietrich et al. 2006), and partly by a survey with Swedish native speakers:

In order to check the emotional content of the interjections without prosody a questionnaire was distributed to an independent group of 43 beginning students of linguistics. They were instructed to assess one of five emotions (happy, angry, sad, fearful or disgusted) to 19 interjections in written form. The result is shown in Figure 1 and gives a possible measure of high and low lexicality. The interjections to the left are unanimously given one emotional label by the 43 subjects, that is, they are high-lexical interjections; the subjects are sure of their emotional content. The interjections to the right are given several emotional labels, that is, they are low-lexical interjections, and more ambiguous. The low-lexical interjections, according to the definition above, *ah*, *åh*, *öh* and *öhh* are the most ambiguous. However, the result of the questionnaire shows that *åh* could be counted as a high-lexical interjection, while *äsch* could be counted as a low-lexical interjection. In spite of this, *ah*, *åh*, *öh* and *öhh* are counted as low-lexical interjections on the grounds that they convey emotions mainly by prosody.

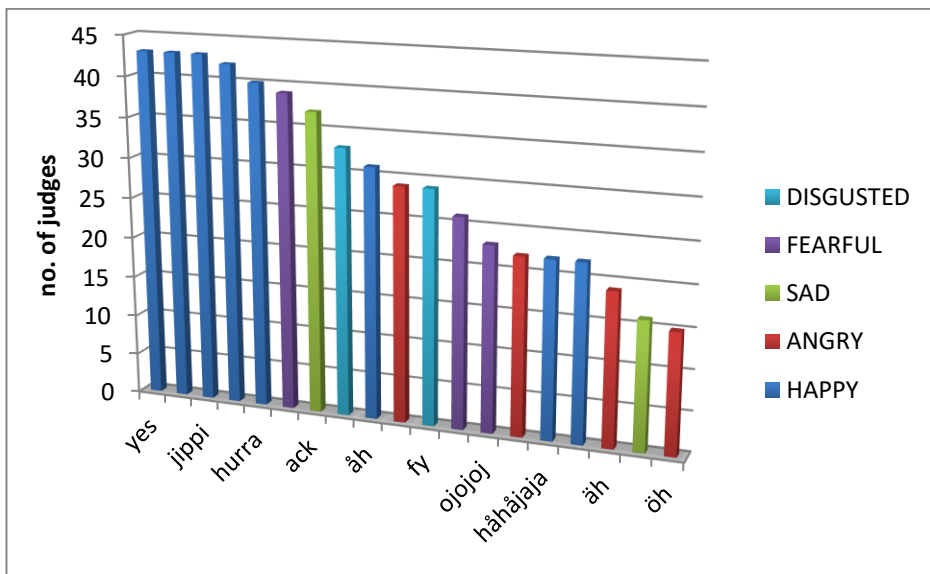


Figure 1. Number of subjects who assigned the same emotion to a certain interjection. The interjections to the right where given several emotional meanings and the number represents the majority vote by the judges.

It is still an open question whether emotions are best described as categories or as emotional dimensions. This study examines emotional categories.

3. MATERIAL AND METHOD

The method consisted of lexical decision experiments where reaction times to different spoken interjections (high-lexical interjections and low-lexical interjections) were measured. The interjections used were recorded with matching or mismatching prosody. Examples are high-lexical interjections *hurra* (yippee) with happy prosody (match) and with sad prosody (mismatch), and low-lexical interjections *äh* (bah) with angry prosody (match) and with sad prosody (mismatch). Furthermore the word stimuli were analysed acoustically and compared with reaction times. Swedish interjections were recorded by a 22-year-old female drama student having Swedish as her mother tongue (Gothenburg dialect). The recordings were made in both matching and mismatching prosody. Non-word interjections were also recorded with differing emotional prosody. The success of the expressions was checked with two other actors. The following contexts for elicitation of the interjections were given to the speaker (modelled on the study by Dietrich et al. 2006):

- a) *Happiness*: the speaker has just won a lot of money from betting on horses;
- b) *Anger*: the speaker is furious with a person she doesn't like, because that person has behaved badly and is not a bit remorseful;
- c) *Disgust*: the speaker is looking at worms crawling around in an open wound;
- d) *Sadness*: the speaker has just heard that a close friend is seriously ill;
- e) *Fear*: the speaker enters a dark abandoned house in the middle of the forest.

Two experiments were run, experiments A and B. The reasons for having two experiments were to not have too many stimuli in one experiment, and to test separately a larger number of words of only two emotional groups (experiment B).

The Test Stimuli

The test stimuli of experiment A that were analysed are shown in Table 1.

Table 1. The analysed test stimuli of experiment A. Words in Swedish, with emotional prosody within parentheses

Low lexical		High lexical	
match	mismatch	match	mismatch
ah (angry)	ah (sad)	asch (angry)	asch (fearful)
äh (happy)	äh (fearful)	nej (angry)	nej (fearful)
äh (sad)		nä (angry)	nä (fearful)
äh (angry)	äh (sad)	äsch (angry)	äsch (fearful)
		hurra (happy)	hurra (angry)
		ja (happy)	ja (sad)
		jippi (happy)	jippi (sad)

Low lexical		High lexical	
match	mismatch	match	mismatch
		tjoho (happy)	tjoho (sad)
		yes (happy)	yes (sad)
		hjälp (fearful)	hjälp (angry)
		ack (sad)	ack (disgusted)
		håhåjaja (sad)	håhåjaja (disgusted)
		ojoj (sad)	ojoj (disgusted)

In total there were 60 stimuli in experiment A, 33 real words and 27 non-words. The 33 real words were the test words analysed, that is, the words that had matching and mismatching prosody (see Table 1). In experiment A five emotions were tested: angry, happy, sad, fearful and disgusted.

The test stimuli of experiment B are shown in Table 2.

Table 2. The test stimuli of experiment B. Words in Swedish, with emotional prosody within parentheses

Low lexical		High lexical	
match	mismatch	match	mismatch
ah (happy)	åh (disgust)	blä (disgust)	blä (happy)
åh (happy)	äh (happy)	fy (disgust)	fy (happy)
äh (disgust)	öh (happy)	hu (disgust)	hu (happy)
öh (disgust)		tvi (disgust)	tvi (happy)
ah (disgust)		urrk (disgust)	urrk (happy)
		usch (disgust)	usch (happy)

In total there were 60 stimuli in experiment B. Twenty of these were the test words analysed, that is, the words that had matching and mismatching prosody (see Table 2). There were 28 non-words, the same non-words as in experiment A. In experiment B only two emotions were tested: disgusted (in matching conditions) and happy (in mismatching conditions). (There were thus 12 words with other emotions that were not analysed.)

Testing Procedure

Perception of 33 Swedish interjections was studied in the lexical decision experiment A. The listener group of experiment A consisted of 22 speech therapy students, ages around 22 years, without any known hearing loss. Experiment B had the same design, but fewer emotions. Perception of 20 Swedish interjections was studied in the lexical decision experiment B. The listener group of experiment B consisted of 14 beginning students of linguistics, without any known hearing loss, ages around 20–35 years.

The subjects listened to spoken interjections presented over headphones. In both experiments A and B they had 1500 msec to respond, and 1500 msec pause between each of the stimuli. In the lexical decision experiments subjects were asked to decide, as quickly as possible, whether a given item was a real word or a non-word. The response was given by pressing one of two buttons, one for yes (real word) and one for no (non-word).

Recording Equipment and Software

The stimuli were recorded with a Sennheiser MZA 900 P (headset microphone) with the programme Logic Pro 9.0 and later cut in Praat 5.0. The software for the lexical decision tests utilized was the reaction time programme PsyScope X B57D.

Analysis

Comparison of reaction times was made between the same word with matching prosody and with mismatching prosody. The response times to the real words (the matching high-lexical interjections and low-lexical interjections and the mismatching high-lexical interjections and low-lexical interjections) were analysed; the non-words were there as a control.

Comparison was also made between groups, high-lexical interjections and low-lexical interjections, with matching and mismatching prosody. The reaction time analyses were compared with acoustic analyses of the stimuli of the experiments.

4. RESULTS

The results of the lexical decision experiments are presented first. Thereafter, the results of the acoustic analysis are presented, and finally, the reaction-time data and the acoustic analyses are related to each other. As there are, by necessity, differences in the number of high-lexical interjections and low-lexical interjections there will not only be quantitative data but also more qualitative presentations of data.

Results from the Lexical Decision Experiments

Experiment A

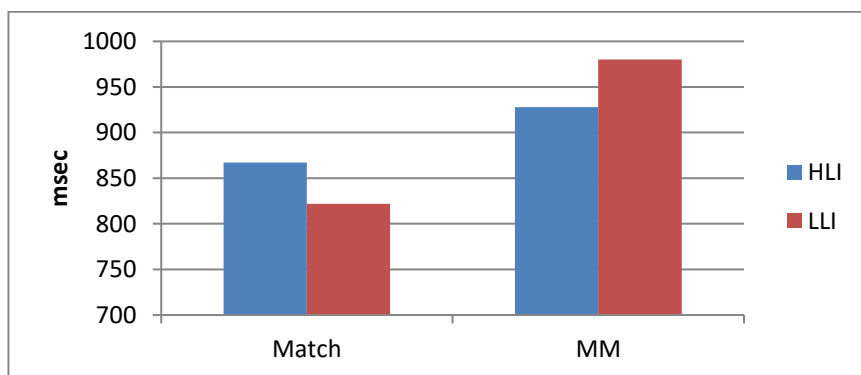


Figure 2. Experiment A. Stimuli with mismatch between lexical content and emotional prosody. HLI = high-lexical interjections; LLI = low-lexical interjections; MM = mismatch.

Stimuli with mismatch between lexical content and emotional prosody were recognized more slowly than matching stimuli, see Figure 2. Low-lexical interjections were recognized more quickly than high-lexical interjections in matching conditions, but low-lexical interjections were recognized more slowly than high-lexical interjections in mismatching conditions. The difference between matching high-lexical interjections and mismatching high-lexical interjections is significant, $t(4.2)$, $p = .0004$. The difference between matching low-lexical interjections and mismatching low-lexical interjections is significant, $t(6.5)$, $p < .0001$. Studying each low-lexical interjection item, the result is that mismatching prosody always slows down reaction times.

One conclusion of the results presented in Figure 2 is that mismatch gives longer reaction times, especially for low-lexical interjections. Another conclusion is that the interjections do get recognized, even though the prosody mismatches.

Experiment B

Only words for disgust and happiness were tested, in matching conditions or in mismatching conditions. In mismatching conditions disgust words were pronounced with happy prosody.

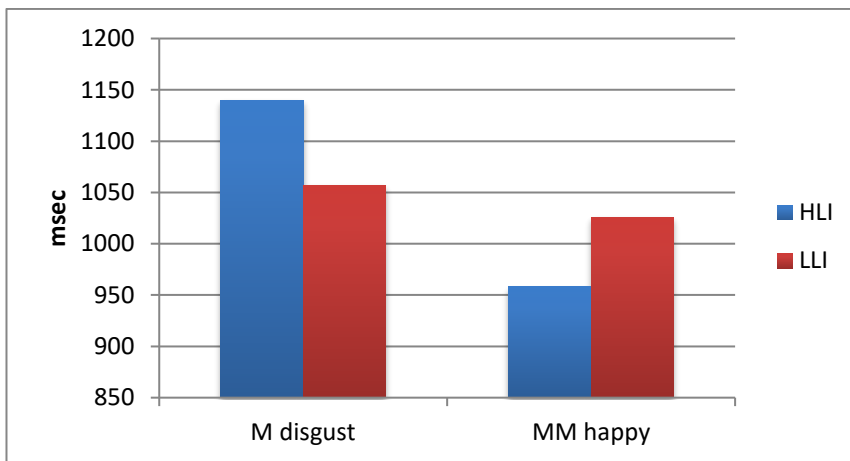


Figure 3. The figure shows that happy prosody speeds up recognition of disgust interjections in mismatch. The matching condition is disgust and the mismatching condition is happiness. (Cf. Figure 2 for Experiment A.).

In experiment B happy prosody speeds up recognition of disgust interjections in mismatch, and more so for high-lexical interjections than for low-lexical interjections. But as well as in experiment A, low-lexical interjections are slower than high-lexical interjections in mismatch.

Another way to put this is that mismatch affects low-lexical interjections more than it affects high-lexical interjections, and that low-lexical interjections are speeded up less by happy prosody than high-lexical interjections, indicating that recognition of low-lexical interjections is more sensitive to mismatching prosody. The low-lexical interjections are few, but the result is very pertinent, since the low-lexical interjections are in general shorter phonologically (only one vowel phoneme) than the high-lexical interjections. The result holds also for individual interjections, not only for means.

The longer reaction times of high-lexical interjections, as compared with low-lexical interjections, in the matching conditions could be an effect of complexity in processing, or a phonological (but not phonetic) length effect.

Summary of the Results of the Lexical Decision Experiments A and B

Mismatching interjections were generally not discarded as non-words. Therefore, it seems that mismatching prosody can affect the processing of an interjection, but it does not hinder an interjection from being recognized.

Figures 2 and 3 show that, in mismatching conditions, low-lexical interjections have longer reaction times than high-lexical interjections. High-lexical interjections have longer reaction times than low-lexical interjections when in matching conditions.

There is, however, a great difference between the results of experiments A and B: the relations between matching and mismatching conditions are opposite. In experiment A, mismatch leads to longer reaction times, while in experiment B, mismatch leads to shorter reaction times. This result led to the further acoustic analysis of the different emotional prosodies, in order to see whether the reaction times were also affected by specific prosodies, and not only by the conditions match and mismatch; in the case of experiment B, matching prosody always expresses disgust, while mismatching prosody expresses happiness. Could it be that happy prosody speeds up reaction times?

Figure 4 shows the mean reaction times for the five different emotional prosodies in matching and mismatching conditions. It seems that the different emotional prosodies have inherent processing times independent of whether the emotional prosodies match or mismatch the lexical content of the interjections. Mismatching happy (or active) prosody also speeds up recognition of both high-lexical interjections and low-lexical interjections. This is explored further in the acoustic analysis.

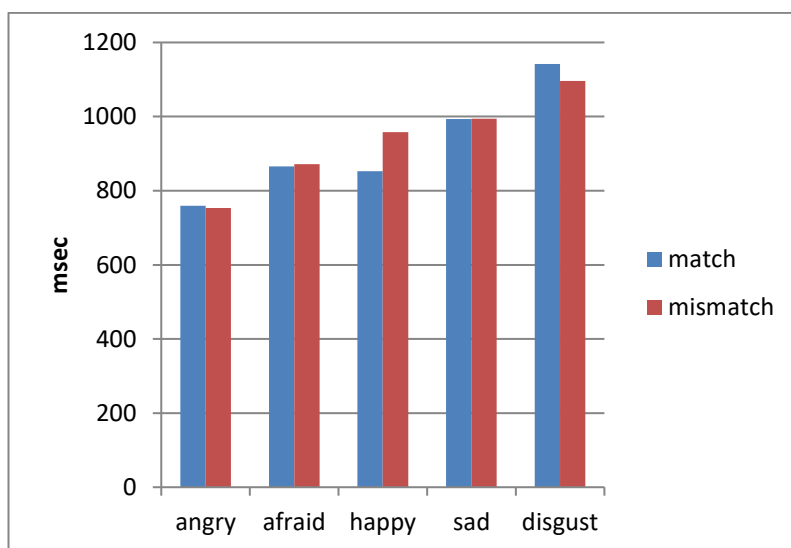


Figure 4. Means for reaction times in matching and mismatching conditions. Data from experiments A and B.

Acoustic Analysis

The questions for the acoustic analyses were the following: Are there systematic differences in F0 variation, or in durations, that correlate with the different reaction times that varied for different emotions? The variables that were analysed were F0 mean, F0 minimum, F0 maximum, difference between F0 maximum and minimum, and durations of the stimuli. The stimuli analysed are the ones used in both experiments A and B.

Comparison of the Durational Analysis of Stimuli with Results from the Reaction-Time Experiments

Durations of Stimuli in Matching Condition

Figure 5 shows that 'angry' prosody has the shortest durations and 'sad' prosody has the longest durations. The durations are compared with the reaction times for matching prosody. The durations of the stimuli expressed with 'angry', 'happy', 'sad' and 'disgusted' prosodies (in matching conditions) seem to co-vary with the corresponding reaction times.

There is thus a kind of length effect, but not a phonological one. It is an effect of different emotional prosodies, in relation to the recognition point of the words. It takes longer, in general, to pronounce a word with disgusted prosody, than to pronounce the same word with happy prosody. That is why, for example, a disgust word expressed with mismatching happy prosody is recognized quicker than the disgust word with matching prosody (seen clearly in experiment B). The different durations of different emotional prosodies is a factor which has to be controlled for in general, in reaction time experiments.

Durations of Stimuli in Mismatching Conditions

Are emotional prosodies expressed in the same way when the prosody is applied in a mismatching way? In other words, does mismatch in itself have an effect on the production of prosody, or do mismatching prosodies have the same characteristics as the corresponding matching prosodies? For example, does hurra with mismatching 'angry' prosody have the same acoustic characteristics as asch with 'angry' prosody?

Figure 5 shows that the relative durations of 'angry', 'happy', 'sad' and 'disgusted' prosody in mismatching conditions are similar to matching conditions, although not significantly correlated.

It can therefore be argued that the durational characteristics of prosodies when produced on mismatching words are not drastically changed. The durations also correlate with reaction times in mismatching conditions.

The result from experiment B that both high- and low-lexical interjections are recognized faster in mismatching conditions than in matching conditions was clearly due to durational characteristics of the different emotional prosodies 'happy' and 'disgusted'.

Figure 5 shows that there seem to be correlations between reaction times in the lexical decision experiments and the durations of stimuli, for the five emotions. The variables RT M and RT MM had a correlation of 0.93, $p = .005$. (Correlation between duration M and duration MM = 0.41, between RT M and duration M = 0.85, between RT MM and duration MM = 0.72 were not quite significant.)

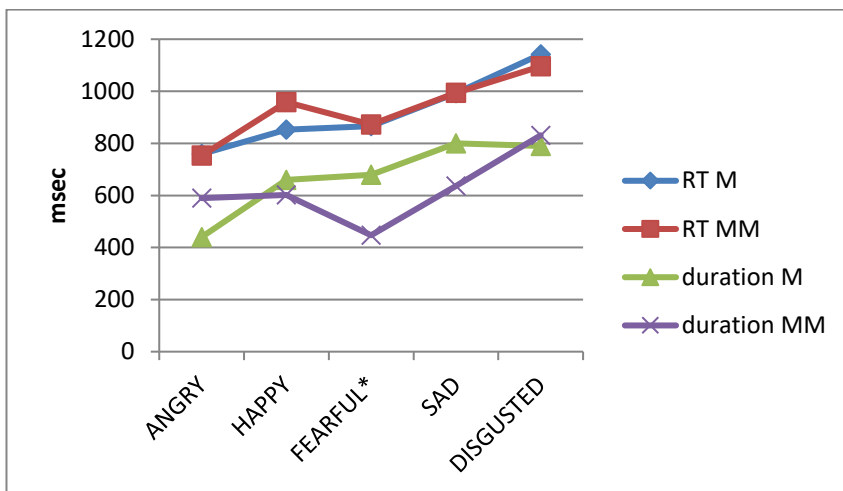


Figure 5. Correlations between the reaction times and the durations of stimuli for five emotions, in experiments A and B. *Fearful' has only one matching word.

This does not mean that there is a trivial correlation between durations of stimuli and reaction times. When we separate the data into high-lexical interjections and low-lexical interjections, it is clear that reaction times also depend on whether the interjection is a high-lexical interjection or a low-lexical interjection and whether it occurs with matching or mismatching emotional prosody. Cf. Figures 2 and 6.

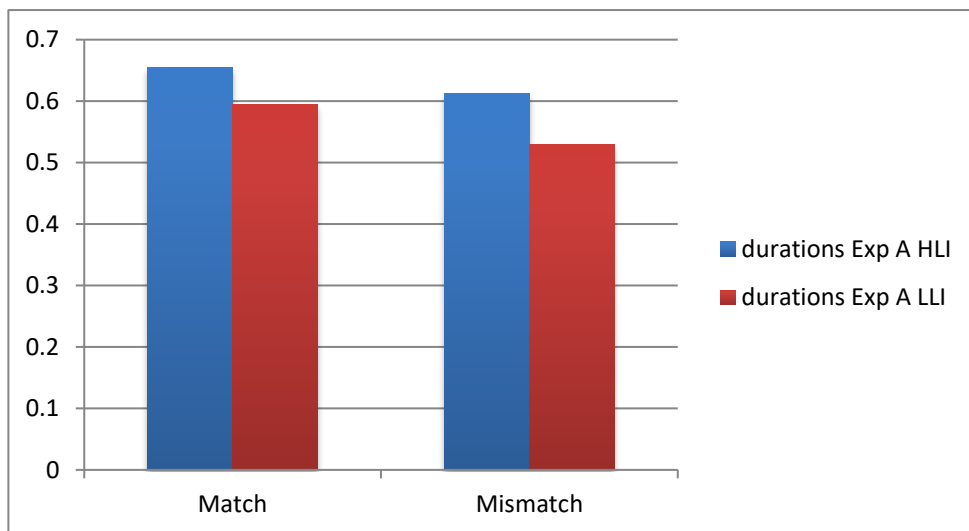


Figure 6. Durations of matching and mismatching high-lexical interjections and low-lexical interjections. Cf. reaction times in Figure 2.

Figure 6 shows that in no case do mismatching low-lexical interjections have longer durations. The longer reaction times of mismatching low-lexical interjections are thus due to longer processing times, because of the mismatching prosody.

Low-lexical interjections do not always have the shortest durations, so durations do not seem necessarily connected to low-lexical interjections; durations seem rather to be connected

to different emotional prosodies. The conclusion is that the low-lexical interjections are dependent on emotional prosody for normal processing and that they are more affected by mismatching prosody.

F0 variation

The F0 variation (minimum/maximum etc) was not correlated to the distinction high-lexical/low-lexical but to a certain emotion. In mismatching condition the variation for angry prosody is greater as compared with matching conditions. However, there is no general difference in F0 variation between matching or mismatching high-lexical interjections and matching or mismatching low-lexical interjections. This means that the differences in reaction times between matching and mismatching high-lexical interjections and matching and mismatching low-lexical interjections, shown in Figures 2 and 3, do not depend on F0 variation, but most probably on difficulties of processing mismatch as such.

5. DISCUSSION

Matching high-lexical interjections take longer than matching low-lexical interjections to process. This could be explained in different ways, for instance, that high-lexical interjections have more information to process than low-lexical interjections. An alternative explanation is that since the ambiguities of many low-lexical interjections do not give longer processing times, this could be an argument for prosody being connected to the lexical representation and that low-lexical interjections are in fact different morphemes.

The interpretation above is also compatible with low-lexical interjections having longer processing times than high-lexical interjections in mismatching conditions: low-lexical interjections are affected more than high-lexical interjections by mismatching prosody, since prosody is connected to the lexical representations in low-lexical interjections and normally disambiguates the ambiguous phoneme string (like *oh*). Longer reaction times are caused by a choice between two or more lexical units, where semantic and prosodic specifications do not fit with the prosodic input (e.g., the duration).

There could thus be specifications of prosody in the lexical representation, which however, does not inhibit the recognition of the word, when the prosody is mismatching. These specifications normally interact with prosodic information on a processing level higher than the lexical representation. With words like low-lexical interjections (which have more prosodic specifications than high-lexical interjections in the lexical representation), the listener requires a longer time to process whether the stimulus is a word or not, when the prosody is mismatching.

What different emotional prosodic specifications could there be, then, in the lexical representation of interjections (especially for low-lexical interjections) that are activated (or not) in the recognition process? These could be duration—shorter for anger, longer for disgust; F0 mean—higher for sadness, lower for disgust; F0 variation—small for anger, large for happiness; and others, for example, location of F0 peak, voice quality (all in combination with other acoustic-perceptual specifications, e.g., low F1, low F2, high F3 for [o]).

Are there correlations between durations and reaction times? The differing reaction times of different emotions show some correlation with durations for emotions, however, not for

low-lexical interjections in mismatching conditions. Therefore, the mismatch as such affects the processing. Furthermore, the fact that low-lexical interjections are processed more slowly than high-lexical interjections in mismatching conditions cannot be attributed to a phonological length effect; low-lexical interjections are shorter than high-lexical interjections phonologically (often only one vowel). The shortness of the low-lexical interjections and the nevertheless slower processing of low-lexical interjections in mismatching conditions is an argument for mismatching prosody being more detrimental for the low-lexical interjections. Since low-lexical interjections are ambiguous, they are more dependent on matching prosody for their interpretation. High-lexical interjections are not as dependent on matching prosody for their recognition, and therefore do not get as long reaction times from mismatching prosody as low-lexical interjections do.

As mentioned above, interjections with mismatching prosody, low-lexical interjections or high-lexical interjections, are usually not discarded as non-words. However, there is a higher rate of wrong responses to mismatching low-lexical interjections as compared with mismatching high-lexical interjections.

There was no correlation between F0 variations and reaction times. There are indeed differences in F0 variation between the different emotions, but these do not correlate with reaction times. There is, of course, a possibility that other acoustic parameters are involved. Voice quality and loudness, as well as, for example, onset of F0 rise could also play a role in the reaction times when processing interjections.

The results of the longer processing times of mismatching low-lexical interjections as compared with mismatching high-lexical interjections are compatible with the results of Metcalfe et al. (2009) on English interjections. They did reaction-time studies on categorizing non-ambiguous (high-lexical) interjections, ambiguous (low-lexical) interjections, and interjections spoken with list intonation, as positive or negative. Metcalfe et al. (2009) found that interjections spoken with list intonation, that is, mismatching intonation, were reacted to more slowly than both the high-lexical interjections and low-lexical interjections with appropriate prosody.

Dietrich et al. (2006) in the study of recognition rates for German interjections with matching and mismatching prosody found that high-lexical items showed a stronger effect than low-lexical interjections, that is, correct recognition of high-lexical items was diminished more than for low-lexical interjections, in mismatching conditions. This result is not in accordance with the present results from the lexical decision experiments, where low-lexical interjections were affected more in mismatching conditions, than high-lexical interjections were. However, Dietrich et al. (2006) also found that prosodic cues yielded correct judgments more often than lexical information, and more so for low-lexical interjections.

In accordance with Nygaard and Lundervald (2002), Dietrich et al. (2006), Nygaard and Queen (2008), Metcalfe et al. (2009) and Wurm (2012) there is evidence that emotion-congruent prosody facilitates processing of emotional words and gives the best recognition. It could be added that 'integration' is the normal state and that separation hinders recognition.

What is the interjectional lexical unit in traditional terms? *Åh* (happy) and *åh* (sad) could be seen as different morphemes. They are not homonymous, or polysemous, since they have different meanings and (partly) different forms. They are thus as separated as *å* [o] 'river' and *åh* [o] 'happy emotion'? This could be tested in priming experiments. Another viewpoint is that interjections could also be seen as independent phrases/utterances. Interjections are words in the lexicon, which function as independent phrases.

In light of the results it is plausible that emotional prosody is specified in the lexicon. This allows both for specification of emotional prosody at the lexical level at the same time as it is compatible with emotional prosody being universal. It is related to bodily and mental reactions and thus indexical. E. g. Abelin (2008), Pell et al. (2011) have shown that the interpretation of emotional prosody is also related to non-verbal communication.

How is emotional prosody in the representation of the lexical unit compatible with general emotional prosody (which is quite universal, and which also works in communication with small children and animals)? The preliminary answer goes as follows: It is part of the semantics of interjections to express emotions. Speakers express emotions indexically in interjections. The listeners experience these interjections with emotional prosody, beginning in childhood. Emotional prosody of interjections thus becomes coded in interjections through listeners' experiences; the emotional specification of lexical units is learned from experience. Therefore, there are indexical elements in the lexical representations of interjections. Over the years, interjections that were originally quite unarticulated (wild forms) have become more and more conventionalized, both ontogenetically and phylogenetically.

CONCLUSION

Stimuli with mismatch between lexical content and emotional prosody were recognized more slowly than matching stimuli, especially for low-lexical interjections. This means that the mismatch between lexical content and emotional prosody affects the recognition process for this type of word. A possible explanation for this is that prosody is more specified in the lexical representation of low-lexical interjections, as compared with high-lexical interjections.

The results thus show that interjections can have a certain degree of emotional-prosodic specification in the lexical representation and that emotional prosody is part of the phonological representation of the interjections. Emotional prosody is thus part of the linguistic system. At the same time this implies that the lexicon is not separated from other cognitive and communicative abilities, such as understanding and expression of emotional prosody in general. Interjections are special words for communicating the here and now and they show the connection between lexicon and general emotional prosody.

The results are also compatible with that low-lexical interjections form different lexical units for different emotional meanings. Allowing for emotional prosody in the phonological specification of the lexicon, words are not ambiguous but represent different morphemes.

It is left to further research to find out whether other lexical categories, such as emotional adjectives or evaluative sound symbolic nouns, e.g., pejoratives, also carry emotional prosodic specifications.

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Chapter 83

CREATIVE COGNITION: A ‘WAVE METHOD’ ANALYSIS OF FRANZ KAFKA’S ‘METAMORPHOSIS’

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ABSTRACT

‘Metamorphosis’ by Franz Kafka is analyzed in this paper from a cognitive literary perspective, mindful of recent advances in the field of creative cognition (including Forceville: 2009). Employing the ‘Wave Method of Cognitive Literature Analysis’ (previously employed in linguistic contexts by Bailey: 1973), a procedural method developed by the writer of this paper, this paper displays the importance of social context and agents in the process of transforming fiction from first cognitive impulses of the writer to the final linguistic end product. Calling for a cognitive incorporation of the reader in the analytical process, in what is referred to here as the ‘writer-reader dynamic’, various linguistic aspects with a solid foundation in linguistic paradigms such as Blending Theory (Fauconnier and Turner 2003) are examined for their impact on the creative spaces of the prototype reader. In doing so, this analysis finds that the ‘container’ image schema of Gregor Samsa’s transformed body is of particular relevance, whilst the extended ‘insect’ metaphor is found to have varying mental activations depending on agents involved. The assumption of Stockwell (2009) that an interaction takes place between texts and humans in the reading of literature is thus built upon in this paper.

Keywords: Kafka, metamorphosis, metaphor, wave method, image schema, container, agents, writer, publisher, translator

1. INTRODUCTION: THE WRITER-READER DYNAMIC

One of the most unique, daring and diversely interpreted writers of the 20th Century, Franz Kafka (1883 – 1924), of Czech nationality, but a writer in the German language, shall be analyzed here on hand of a cognitive literature analysis model developed by the author of this paper. The ‘Wave Method for Cognitive Literature analysis’, formed with a firm basis in linguistic theory and on hand of the writer’s own literary publications and experiences, will

be discussed in the methodology section which follows (2.0). Prague-born Kafka published relatively little during his lifetime (Fechter, 1952: 489), which will be an observation of some importance in the analysis of the cognitive intentions of the author, taking into account the worldly input as Kafka struggled to realize his writing ambitions against the pressure of everyday necessities in the workplace. Kafka's lifetime saw only a select few titles published, amongst them the short story 'Metamorphosis' which is to be examined here, whilst the majority of his work was published posthumously.

'*Die Verwandlung*' in the German original, created and written in November and December 1912, would indeed become one of his most lasting works. Countless volumes have been written in attempting an all-encompassing analysis of both Kafka's work in general (such as Mueller 2009), as well as 'Metamorphosis' specific work (including Beicken 2007), and finally work with an altogether different orientation like the Jewish-orientated analysis of Groetzinger (1992: 7), who writes:

"Schliesslich hat sich die Rezeption dieses Erzählwerkes für eine Vielzahl von Deutungen als geeignet erwiesen, die allesamt ohne die jüdische Komponente auskommen konnten."¹

It is precisely this breadth of interpretations which makes this work so fascinating for the 'Wave Method' cognitive analysis, which takes into account what each different reader brings to the reading. Thus, for example, a Jewish reader will interpret Kafka's 'Metamorphosis' in one way, perhaps similar to the way that Groetzinger analyzed the texts, while a reader without any knowledge of the Jewish religion may bring an entirely different world view to the reading. Which interpretation, then, is correct? The answer which is developed in the here gained results would seem to indicate that each is correct in the context of its own entirely specific writer-reader dynamic.

2. PROCEDURE: THE WAVE METHOD OF COGNITIVE LITERATURE ANALYSIS

The here following analytical model is the result of a lengthy period of investigation into the cognitive mechanisms and procedures of creative writing. This has been aided and amplified by my own experiences as a published fiction writer in the novel and short story form. What is proposed here is a linear analysis method, which begins by analyzing the cognitive impact of the title upon the reader, and the there following entire reading experience in the order of receptivity of a text; from beginning to progression to conclusion, considering all the while the central plot-related questions. The analysis then takes the linguistic end product as the basis for the receptive impulses, and deduces cognitive choices of the writer at the various productive stages of the writing process. Finally, taking into account the 'worldly input' of the writer at the centre of the creativity process, as shall become evident in Figure 1 to follow, the cognitive intentions of the writer in producing the particular piece of writing will become evident. A 'Wave theory' approach has been utilized previously in linguistic studies, specifically in the field of sociolinguistics. The concept of a 'Wave theory' was

¹ Translation: "For the reception of this body of work has been suitable for a wide variety of interpretations, all of which were able to function without the Jewish component."

employed by Bailey (1973), for example, to explain lexico-grammatical changes in varieties of American English, thus identifying aspects which Chomskian theory did or could not deal with due to the latter's omission of social explanations. This analysis method which follows here attempts to facilitate a thorough cognitive analysis of both the writer and reader's mental processes through the basis of a linguistic analysis of the text. The intention then is to include both productive and receptive aspects of literature in the analysis, for as Fairclough (1995: 9) pointed out: "the principle that textual analysis should be combined with analysis of practices of production and consumption has not been adequately operationalized...". Thus, this analysis method aims to clearly showcase and analyze all aspects of textual production and consumption in the realm of creative fiction writing. The intention behind such a procedural analysis is to demonstrate that while traditional literary analysis lays a keen emphasis on the intentions of the author in the linguistic choices, the current analysis method will attempt an all-encompassing analytical approach, which will crucially also incorporate the reader as a key cognitive actor in the creative writing process. This broader approach to literary analysis is not just useful when taking into account the recipient of the work of literature, who will in this case be the prototype reader that is the author of this study, but can also thereby lead to valuable insights into the writer's cognitive intentions. In his afterword to the German edition of Franz Kafka's 'Metamorphosis' (2009: 71), Egon Schwarz writes, when talking about the literary theories of reception theory and reception aesthetic which have come into focus in recent years:

"Wir deuten nicht so sehr Kafkas Fiktion, sondern unsere eigenen Empfindungen bei ihrer Lektüre oder, genauer: die Begegnung der beiden im historischen Augenblick unserer Gegenwart."²

This notion also captures the essential promise of the 'Wave Method for cognitive literature analysis'³, for it not only offers to bring together the two focal points of writer and reader into the present moment which Schwarz mentions, but offers the possibility for the reader to do so from the inherently solid standpoint of their own receptive capabilities. Here follows the procedural model of analysis to be employed and thereafter the explanation of the various stages identified, as well as how they will be analyzed:

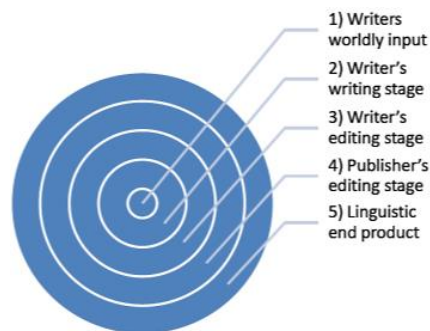


Figure 1. Wave Method of Cognitive Literature Analysis.

² That is (my translation always from here onwards): "we interpret not so much Kafka's fiction, but our own sentiments upon reading it, or, more precisely yet: the encounter of the two in the historic moment of our present."

³ Referred to hereafter simply as the 'Wave Method'.

Table 1. Key for analysis method

Wave	Content	Analysis to be employed
1	Writer's worldly input	Research of key worldly and contextual input
2	Writer's writing stage	Analysis of cognitive intentions of the author
3	Writer's editing stage	Analysis of stylistic resonance of text
4	Publisher's editing stage	Interview with publishers and indicators from research
5	Linguistic end product (in the form of novel or short story, etc.)	Textual linguistic analysis
6	Reader reception	Cognitive analysis of receptive impact

3. RESULTS

3.1. The Title

The very first cognitive reference for the reader is the title. Incidentally, it is normally this very title which the author places, as deftly or aggressively as necessary, as the final, provocative or incisive touch. From own experience, and also from other writers' interviews and recollections⁴, the title is usually finalized from a number of possible drafts after having written the entire story, making for an even more important impact of the title. This is the essence of the work of fiction, the few words which must contain the soul of the piece and attract the reader's attention, rather immediately. In cognitive terms, this is a case of working against what Stockwell (2009: 7) calls 'prototypicality', that is it must be sufficiently different from all the other offerings in the bookshop to stand a chance of being picked up by the reader⁵.

On then to Kafka's own reversal of prototypicality through his choice of the title, which is achieved instantly by asking the reader to create a new reality on hand of the information that is being insinuated in the title. The one-word title in English centers the entirety of reader attention upon the central focus of the story ahead, from the very beginning. The reader is asked to focus entirely on a metamorphosis.

And from the very start we, as the reader, take into account that some kind of change is going to take place in our established world view. We must not wait long to find out, on hand of the linguistic end product that is the text, what that change will be (as the following subsection will demonstrate).

The author has then succeeded, already, through the word choice of the title, in focusing the reader's attention directly on the subject matter at hand; that is the bodily transformation through which he will place his social critique in the reader's mind.

⁴ See for example Ernest Hemingway, in the Paris Review: Issue 18, Spring 1958.

⁵ Thus, for example, my first published short story (Bartleby Snopes Literary Magazine, USA, July 2009) was entitled 'Other side of the moon', with the first word of the title already suggesting and implying difference, and essentially aiming for a heightened cognitive impact upon the reader.

3.2. The Beginning

The beginning of the story is highly relevant in the ‘receptive’ phase of the ‘Wave Method’ analysis, since the change insinuated by Kafka’s title (‘Metamorphosis’) immediately materializes within the very first sentence. Thus, in that highly cognitive opening sentence Kafka wrote (2007: 87): “When Gregor Samsa awoke one morning from troubled dreams, he found himself changed into a monstrous cockroach in his bed.” Here the receptive reading impact is immediately heightened with regards to the metamorphosis or change already signalled by the title and discussed above. That unknown change has now taken on the specific form of the ‘monstrous cockroach’ into which the main character has found himself transformed after waking up from troubled dreams, and the reader must now deal with this new reality.

In receptive cognitive terms this is achieved through the reader’s blend of ‘creative spaces’, as this study shall refer to the concept employed here to analyze the creation of a new fictional reality, employing a term adapted from the ‘mental spaces’ which Fauconnier and Turner (2003) discuss and which have been introduced in the Literary Review (section 3) above. The reference to creativity in this name showcases the belief of this study that cognitive creativity is indeed apparent on both sides of the writer-reader dynamic. As shall become evident, many of the creative spaces of writer and reader are also shared, or have similar inputs, such as the own bodily experiences. Here, the creative spaces of the prototype reader’s own general worldly experiences negating the possibility of such a metamorphosis, and specific memories of waking up from troubled dreams in a seemingly altered state take on a great importance in the blend, as can be seen in table 4 below. The input of creative spaces is initiated by the reading of Kafka’s opening sentence in which a human being has just been transformed into an insect. This cognitive activation of the opening sentence in the reader’s mind can be seen in table 4 below, which also portrays the possible (deduced) creative spaces of the writer in the dynamic transfer of fiction.

When, as discussed earlier in the Literary Review, Fauconnier and Turner point to such possibilities as “implicit counterfactual spaces” (2003: 87), this is now what is being shown in Table 2 below, for there is the input of creative space 2 in which a counterfactual action is being described: the metamorphosis of a human being (creative space 1) into an insect. For the prototype reader, this is essentially a counterfactual literary blend, for there is no known human case where a man has effectively been transformed into a real cockroach. At least for this reader, with cultural knowledge which negates the existence of magic, there is no known such case. And so it is at first a negation (in creative space 2) of the fictional blend proposed by the writer which takes place in the reader’s mind. Then other factors come into play. For one, the creative space 3 in which a specific bodily memory of waking up in a seemingly altered, or otherworldly state from a troubled sleep fits perfectly with the writer’s fitting description of these happenings in the fictional story. The writer’s skilfulness is now a real feature in the success of the creative blend in the reader’s mind. The blend is taking on shape now in the generic space, because a shared experience is leading to the shared information that both Gregor Samsa as a human being and as an insect are essentially *alive*. Finally, in the blend which then ensues within split-seconds of the reading of the linguistic end product of the entirely unusual metamorphosis occurring in a piece of fictional writing, the reader also implicitly employs his knowledge of the procedural schemas (Hogan 2003: 47) of reading.

Table 2. The transformation of Gregor Samsa

Actor	Creative Space 1	Creative Space 2	Creative Space 3	Generic Space	Emergent structure
Reader (receptive)	Identity: Gregor Samsa as human being.	Identity: Gregor Samsa as insect. (Counterfactual) Triggers reader's own general worldly experiences, which negate possibility of such a metamorphosis.	Identity: Reader's own bodily input of specific memories of waking up from troubled dreams with a seemingly altered state of being.	Identity: Gregor Samsa as living creature.	New received fictional reality: Gregor Samsa has been transformed in opening sentence into insect. Augmented by reader's knowledge of procedural schemas of reading.
Writer (creative)	Identity: Gregor Samsa as human being.	Identity: Gregor Samsa as insect. (Counterfactual) Example of heightened writing creativity in that it provides variation from standard and dissolves 'threshold of rationality'.	Identity: Writer's own bodily experiences of feeling suppressed and degraded in family surroundings.	Identity: Gregor Samsa as living creature.	New created fictional reality: Gregor Samsa has been transformed in opening sentence into insect. Forms the basis for the progression of the fiction writing process.

Note: Table showing dynamic transfer of fiction in Kafka's 'Metamorphosis', employing deduced writer creative spaces and prototype reader creative spaces.

Here, the reader is aware of the possible suppression of reality in fiction writing which indeed forms a tradition in literary writing. The literary device of transformation of characters into animals has been used extensively to bring across meaning and social critique in "literary traditions in which metamorphosis has been a regular choice of motive: fables, mythical tales, fantasy writings and meaningful parables." (Mueller: 2009: 43). Thus certain readers, including this prototype reader, are already aware of the historical tradition of such a change of a main character into an animal, although the timing of the metamorphosis right at the start is a fine plot-based choice on the part of the author to heighten readability.

Other readers who may not bring this awareness to the reading, or who are only subconsciously aware of this literary tradition, may rely more heavily on the procedural schemas of reading a work of fiction; that is to expect a problem to arise at the beginning, for this to be heightened in the middle of the story, and finally to be solved towards the end or the conclusion. The acceptance of the metamorphosis of Gregor Samsa would be based in this case more strongly on the procedural schemas than on specific knowledge related to literary traditions. In this specific case, the prototype reader's knowledge of this long-standing literary tradition and liking for fantastic fiction leads to the acceptance of the metamorphosis and successful activation of the blend of Samsa's transformation.

In terms of linguistic choices, the transformation of Gregor Samsa can indeed be seen as an extended metaphor placed right at the beginning of the story, and then systematically extended towards the solving of two central questions in the reader's mind:

- 1) will Gregor Samsa return to being a human once more? and
- 2) why has he been transformed into this beastly cockroach in the first place?

At this stage, even before moving on to the author's choice of metaphor and the choice of animal in particular, we should briefly consider wave 4 of the analysis method, which is the publisher's editing stage. In this case there is evidence of the role of the publisher in the creative writing process. Many of Kafka's works which were published posthumously indeed only appeared because his close friend and fellow writer Max Brod acted as any serious publisher would have done and ignored Kafka's last wishes to have all his works destroyed. Brod had them published. But this applies to other works, including 'The Castle'. In the case of 'Metamorphosis', which was published in Kafka's lifetime, there is an altogether different input at the publisher's editing stage (wave 4). Certainly in the English edition of the text examined in this study (Kafka: 2007), the original German 'ungeheueren Ungeziefer' (Schwarz, 2001: 5) has been *specified* in the English translation, which reads: "a monstrous cockroach" (Kafka, 2007: 87).

The specification of the insect in question therefore actively changes the reader experience in the two different languages. Thus, there is a difference here in terms of word choice in the translation, and one which has a very real impact upon the linguistic end product (wave 5). We are confronted with a specific insect in the English text analyzed, allowing for the reader to activate associated (cognitive activation of creative spaces for: cockroach) feelings of disgust and aversion from the very start, while the German original by Kafka offers more scope for the reader's imagination to create a detailed picture of the insect into which Gregor Samsa has so shockingly found himself transformed. What may seem at first glance a translator's issue indeed falls under the publisher's editing stage (wave 4) of the analysis method, for the publisher is ultimately the commissioner and finally responsible in terms of commissioning and approving the translation.

As has become evident in table 4 above, the beginning of the story is an example of heightened creativity on the writer's part, in that the second creative space contains information which is counterfactual to the writer's general worldly knowledge that the transformation of a man to an insect is quite impossible. This 'threshold of rationality', as I refer to it here, is then dissolved by Kafka's creative input, which is the new idea of transforming a man into a cockroach in order to lend additional emphasis to his social critique. It may be deduced from the reader's receptive reaction and the writer's worldly surroundings of a troubled familiar relationship⁶ that Kafka's own bodily experiences of feeling suppressed and degraded in his family surroundings also contributed to this creative blend. This then flows into the descriptive element of the first sentence, giving the sentence *authenticity* despite the seemingly fantastical happening which has just occurred. In terms of Hogan's (2003) mental activation pattern, the choice of the animal by Kafka in the creation process is an interesting one to consider. In a hypothetical writer mental activation pattern, the cognitive impulses of creativity might be represented as follows in table 3.

⁶ To be discussed shortly.

**Table 3. Hypothetical mental activation pattern of writer: creative activation
(Adapted from Hogan: 2003)**

Input node	Output node	Activation strength
Gregor Samsa + Family Situation + Financial Situation	Dog	+0.9
Gregor Samsa + Family Situation + Financial Situation	Cat	+ 0.8
Gregor Samsa + Family Situation + Financial Situation	Beetle	+ 0.75

Thus in this hypothetical creative activation pattern for Kafka, the outright 1.0 threshold for activation is not reached because there are various other options which are considered. The writer's worldly input may initially give more activation strength to the animals of 'dog' and 'cat', which are generally associated with living in conjunction with a family. An insect does not fit into this normal associative schema. Thus the hypothetical lower activation strength indicated above in table 3. But the choice of an insect in the story may then be linked to Kafka's need for an animal of less prestige and usefulness than a dog or a cat. This is a notion which cannot be confirmed with real data, but table 3 hints at the extent to which creativity relies on variations from the standard or prototypical solution. Thus it displays Kafka's creativity in opting for the less common extended metaphor which essentially provides the optimal conveyer of the writer's cognitive intentions.

The cognitive messages of family depreciation which Kafka is trying to convey to the reader is thus in entire harmony with the choice of extended metaphor at the writer's writing stage (wave 2). An insect is useless to the family, just as Gregor Samsa becomes a useless, horribly grotesque nuisance to his family from the moment when he does not earn the family's wages any longer. Having thus initiated the receptive mental activation of the story, it is thereafter the wish of the reader to find out what happens to the man turned insect. In the context of successful fiction the progression (to be discussed here in the next section) of the story usually brings an intensification of the main character's dilemma, which is also the case with Gregor Samsa.

The reader is quickly informed that (Kafka, 2007: 87): "It was no dream." A possible standard solution to the creative variation chosen by Kafka (that Samsa is indeed only trapped in a nightmarish dream, as so many potential readers have been) is thus quickly extinguished. The counter-factual blend continues for the reader. And as the story progresses, it is indeed intensified. In highly descriptive detail, the reader now receives information relating to the actual feelings of Gregor Samsa within the confines of this new, monstrous body of his. Here the analysis of Kafka's use of image schemas is of particular interest. As we shall see in the here following section on the progression of the story, these entirely basic building blocks of our cognitive system again serve to enhance reader identification with the dilemma of Gregor Samsa.

3.3. The Progression: Examining the Impact and Use of the 'Container' Image Schema

Specifically of keen interest in the progression of the story is what Turner (1996: 16) identified as the 'container' image schema, which is part of shared human experiences of our

bodies and includes an interior, exterior, and a boundary that separates them. Crucially, there is no cross-cultural difference in this regard, because each human being can relate to this bodily experience, making perhaps thereby for part of the universal appeal of Kafka's story. This can be linked to the following theory: "Embodiment or 'grounding' hypothesis – (which) contends that language partly makes sense because it is tied to our bodily being in the world" (In Brone and Vandaele, Eds, 2009: 12). This focus on bodily feelings effectively negates any differences which might be brought about by cross-cultural differences. Whilst the aforementioned translation (at wave 4) means a different reading experience for German or English readers, for example, the writer's concerted use of the 'container' image schema means there is conformity across cultures in terms of allowing the reader to actually feel the troubling bodily experiences of Gregor Samsa.

The 'container' is used on multiple occasions. Firstly the body of the cockroach which is described in exquisite detail from the point of view of Gregor Samsa from the second sentence onwards (Kafka, 2007: 87): "His numerous legs, pathetically frail by contrast to the rest of him, waved feebly before his eyes." Here, the change becomes starkly felt for the reader, who is seeing the fictional world through the eyes of the transformed main character. There are thus various containers being activated here in the reader's mind; the container of Gregor's body, that of his head, through which we have the vision of the world which he now has, disgusting feeble legs included, and finally the container of the room within which he finds himself trapped. If that were all not enough, there is also the final container of the flat to contend with. It is this family flat in which his entire family lives and will constrict his activities as a cockroach to the point of suffocating Gregor's will to live. All are obnoxious containers that Samsa wants to escape from, mostly without success.

While he does escape from his room as the story progresses, he is quickly forced back inside by the disgusted reactions of his family. And escaping from the flat itself, which to this prototype reader seemed like the most interesting test available for the transformed insect (imagining the hilarity and drama of a scene where Gregor Samsa turns up at his hated office and confronts his detested boss), is in itself a utopia. The reader's entire receptive experience is centered variously in Gregor Samsa's mind, head, body or room. At rare intervals the container that is the flat at large is accessed. But the outside world is an inaccessible area in the receptive experience. Thus what becomes evident in the receptive progression of the story is the impossibility of escape from the container that is the body. In doing so, the writer has not only focused the reader's attention on Gregor's internal dilemma, but also multiplied the shocking effect of his metamorphosis at the beginning of the story.

Through this hideous body's only possible outlet – the eyes – the reader is shown around the room for the first time and later around the flat. Parallel to this development, the window which is mentioned early in the story and reappears again at intermittent intervals later, and offers some of the only glimpses of the misery that supposedly awaits outside the container that is the Samsa family flat. In the first such instance (Kafka, 2007: 87) the "drab weather outside – raindrops could be heard plinking against the tin window-ledges – made him quite melancholy." The main character's mood is succinctly captured by this view outside of his window upon first becoming transformed into the beastly insect, a tendency reinforced a few pages later in the reader's cognitive system when Kafka writes (2007: 92) that "he leveled his gaze as sharply as possible at the window, but unfortunately there was little solace or encouragement to be drawn from the sight of the morning fog". The prototype reader is here made acutely aware of the increasing desperation which Gregor Samsa feels as he is stuck

inside the container of his now hideous body, looking out of the window in the hope of encouragement or solace from the outside world. This will never come. Samsa is left in an entirely confused state, a notion emphasized by the foggiess of the outside world. But the reader is still hopeful that such an outside force may still transform the container of Samsa's insect body back into the human form we are all familiar with, as Mueller (2009: 46) points out: "The reader, who observes the changed man with interest, immediately creates hypotheses, which he/she takes from their everyday knowledge, und which they can then verify or falsify as the story progresses".

The container image schema is thus omnipresent because it is the central focus of the metamorphosis, which in turn becomes both the narrator's and the reader's chief preoccupation. Through Samsa's metamorphosis into an insect, the reader is in due course shown the inhumane living conditions which Gregor Samsa encounters in his family and professional worlds. But without any real hope of ever escaping from these interlocking worlds which are constricting his own dreams and creativity, he is entirely focused at all times on the 'container' that is his body. In receptive terms, it becomes evident that the 'container' image schema is repeatedly taken up to bring across this lack of hope for the cornered insect as his family becomes increasingly hostile (Kafka, 2007: 100): "Now Gregor didn't even set foot in the room, but leaned against the inside of the fixed half of the door, so that only half his body could be seen, and the head with which he was peering across at the others cocked on its side a little." Direct linguistic end product (wave 5) mentions of the containers that are the room, as well as the body and the head of the cockroach showcase once again the powerful receptive impact of suppression and helplessness on Samsa's part; there seems to be no escape route possible, and he is afraid even to set a foot outside of his own room. He maintains half of his terrible body hidden in order not to cause further revulsion amongst his family members.

In terms of productive level choices, the aforementioned extract very much displays Kafka's intentions to centre the reader's focus on the inner feelings of the insect Gregor Samsa. The extended metaphor of the insect continues, of course, but it is in terms of word choice at the writer's writing stage (wave 2) that Kafka so effectively and successfully creates the mood and resonance of this story. By choosing three universal 'containers' – room, body and head, Kafka creates an almost claustrophobic centricity on the inner feelings of his main character. In terms of Kafka's cognitive intentions in writing with this emphasis on the 'container' image schema, this allows the interpretation that the writer intended to highlight the family-related repercussions of the monetary obligations brought about by an exploitative, capitalistic system, where one family member often bore the burden of working to support the entire family. This notion is confirmed once more by Kafka's (wave 2 and 3) word choice in the immediate aftermath of the family's discovery of his altered condition, with the chief clerk also present and seeing that Samsa is no longer in a position to come to work in such a state.

In the receptive intake, this is undoubtedly a moment of temporary triumph for the main character with whom the reader now feels a bodily identification. Gregor has emerged from the prison-like 'container' of his room and still harbors the illusion that his family will morally support him in his quest to return to his former human condition. Going to his dreaded work as a travelling salesman – apparently selling cloths of different types – is fast becoming a utopia, as the chief clerk can now see. For the prototype reader, this is a moment of triumph in the inner battle which the insect Gregor is facing.

This sense of hopefulness at an eventual resolution of the problem is reflected here in Kafka's choice of words (wave 2 and 3) as Samsa looks out of the (container) flat once more through the window and hope mingles with the usual dreariness of family and workplace (Kafka, 2007: 100): "It was much brighter now; a little section of the endless grey-black frontage of the building opposite – it was a hospital – could clearly be seen, with its rhythmically recurring windows; it was still raining, but now only in single large drops, individually fashioned and flung to the ground." What delightful contrasts Kafka brings page-wards here from his creative mental impulses; the brighter view has now cleared away the earlier mist of his main character's hopelessness; the endless monotony of the building opposite to the flat, which is symbolic of the daily routine of a work he does not enjoy and the "rhythmically recurring windows"⁷.

So the reader is confronted with windows again, those eyes to the outside world which has now become so elusive to Gregor in his insect state. And consider at this stage Kafka's word choice of describing the continuing rain, symbolic of the continuing difficulty of the situation – as "single large drops, individually fashioned and flung to the ground." The writer's timing in producing this statement is highly significant in the writer-reader dynamic. Gregor Samsa's individuality is immediately reinforced through the single raindrops the moment after it becomes clear that he cannot go to work in the form of an insect, for he would indeed repel each and every costumer. But in this individual's newfound hope there is equally despair, and the reader is subjected to a cognitive hint of the fatal ending. The single rain drops are flung to the ground, rather than simply falling, or dropping, which would indeed have been the more standard word choices in cognitive terms for the writer. In applying a variation from the prototype here, the writer actively challenges the reader to imagine a possible ending to the story. A certain forcefulness is insinuated here by the author, which can be seen to draw from Kafka's personal experiences (at wave 1), which included coming to terms with the difficulty of following individual dreams in a system which dictated a steady need for income for the family that writing would not bring about.

On the prototype reader of this study, this inner struggle of Gregor Samsa in 'Metamorphosis', emphasized by the 'container' image schema, indeed directly had the receptive impact which can be seen in table 4 below. Into the reader's interpretation of the story thus flows the newly acquired knowledge of Kafka's own struggles to follow his passion of writing whilst at the same time having to earn a living for his family. This interpretation is supported factually (at the writer's worldly input, wave 1), then, by the writer's own admission that he indeed (Beicken, 2007: 8):

"hated his job, because it hinders him at his writing. Complaints about his office were frequently found. In his letters to his fiancée Felice he wrote: 'the office is a horror...' 'Entirely incapable to deal with the office.' Consequently Gregor (Samsa) portrays the professional world as an entirely overwhelming human affair..."

This is an important observation from a receptive analytical point of view in that my own experiences and memories as a young writer needing to earn a living with other professions such as teaching or journalism undoubtedly flow into my understanding of Kafka's meaning. Similarly, a reader with a Jewish background, such as the one cited in the early stages of this

⁷ The poetically flowing alliterated English version here again brought about by the translator's input at wave 4.

Kafka analysis, might more readily interpret the Jewish aspects of the story, while a reader with family problems might place more emphasis on the lack of empathy displayed towards the transformed Gregor Samsa by his family as he struggles to become human again. Clearly, then, reader identity and past worldly experiences are crucial in the writer-reader dynamic, as can be seen from table 4 below.

Thus it may be deduced that Kafka's cognitive intentions in the writing process could have been to criticize the societal and professional inhumanity of his time and age – something which he found the perfectly fitting extended metaphor for in the insect that became Samsa. Added to this there was also undoubtedly a strong impetus in this story from his own frustrations as a writer having to make a living through other professions if he was to realize his ambition of liberating himself of the influence of his own family and authoritarian father and to begin his own married life with the fiancée he wrote letters to in such revealing detail.

The extended insect metaphor then merges in the progression of the story to provide a further measure of hope for the reader that a resolution of Gregor Samsa's dilemma could be in sight. Thus when the chief clerk runs out of the flat after seeing Gregor's hideous body, and Gregor attempts to chase after him down to the street to stop him from making his job redundant, that altered body becomes active for the first time and takes our main character to the swell of the flat's door.

Table 4. Use and effect of 'container' image schema in Kafka's 'Metamorphosis'

Actor	Linguistic device	Receptive effect	Productive choice	Cognitive intention	Worldly input
Reader (receptive)	'Container' Image schema.	Focus attention on inner turmoil of Gregor, specifically his problems in professional ambit.			Prototype reader's own worldly struggle to make a living from fiction writing, mirrored in reading on Kafka.
Writer (creative)	'Container' Image schema.	Possible feedback from publisher, critics and readers.	(Kafka 2007: 87): "His numerous legs, pathetically frail by contrast to the rest of him, waved feebly before his eyes."	To centre the reader's attention on the inner struggle facing Gregor Samsa, and thereby showcase his social critique of society in which he lived.	Kafka's own struggle (at wave 1) to make a living for his family, with a job which he detested and which he felt stopped him from his writing vocation.

Thus Gregor comes within reach of a possible escape from the claustrophobic family surroundings which seem to be hindering him from finding a solution to his altered condition (Kafka 2007: 102):

“Gregor dropped with a short cry on to his many little legs. No sooner had this happened, than for the first time that morning he felt a sense of physical well-being; the little legs had solid ground under them; they obeyed perfectly, as he noted to his satisfaction, even seeking to carry him where he wanted to go; and he was on the point of believing a final improvement in his condition was imminent. But at that very moment, while he was still swaying from his initial impetus, not far from his mother and just in front of her on the ground, she, who had seemed so utterly immersed in herself, suddenly leaped into the air, arms wide, fingers spread, and screamed: ‘Help, oh please God, help me!’”

The figure of the mother, to whom Gregor shortly thereafter ‘softly’ looks up, thus hinders the insect from chasing after the chief clerk down the stairs. In receptive terms, the reader finds out that the ‘container’ of the metaphoric insect-body is now working well, and is even giving Gregor a sense of well-being and satisfaction for the first time that morning. The reader thus links a movement towards the outside world with a positive emotion on Gregor’s part. But at this stage the mother stops Gregor’s escape from the container that is the flat. She does this by appealing to Gregor’s emotional bond in the mother-son relationship. It is a mental appeal.

The appeal is directed at the container that is Gregor’s head. Thus we have a prototype reader inundated with limitations within these containers discussed above, creating an accurate reading resonance of the way in which Gregor is trapped within these inter-linking family-professional ambits that stops him from unfolding his full potential and breaking out to face the world on his own terms.

Despite this emotional restriction of Gregor’s freedom of movement and actions by his mother, the prototype reader is again given an inkling of hope that the family will now finally actively attempt to help Gregor. This sense of hope is activated by the reader’s own input of motherly love, and comes just as the mother is shouting for divine help. In that shout, though, also lies the essential negation of this hope. The receptive skepticism sets in the split-second thereafter. How will a mother help her son, when all she is asking for is help for herself? The writer’s word choice is effective here in showcasing the selfishness of the Samsa family, all the more so when the dictatorial father figure who many literary critics have linked to Kafka’s own life takes the chief clerk’s cane and a newspaper (Kafka, 2007: 104) as he “attempted to drive Gregor back into his room.”

The prototype reader registers this negation of Gregor’s drive for freedom all the more acutely because of the aforementioned focus on the container that is the insect body. This means that the reader is also being hassled back into the original, constrictive container with Gregor: the room in which he first woke up as an insect.

Again, moving swiftly from the receptive analysis to that of the production level choices of the writer, we are confronted with the highly symbolic imagery of Gregor’s father utilizing both a newspaper and the chief clerk’s cane to force the unwanted insect-son back into the hidden container of his bedroom. Power in the professional ambit merges here with power in the familiar ambit. This power is concentrated entirely in the repressive father figure, who later also physically attacks insect Gregor with a hurled apple which becomes encrusted in Gregor’s back. For now, though, the reader is made to consider the powerful imagery of concentrated power brought about by Kafka’s simple word choice at the productive level (waves 2 and 3) of his story, which is visualized in Figure 3 below.

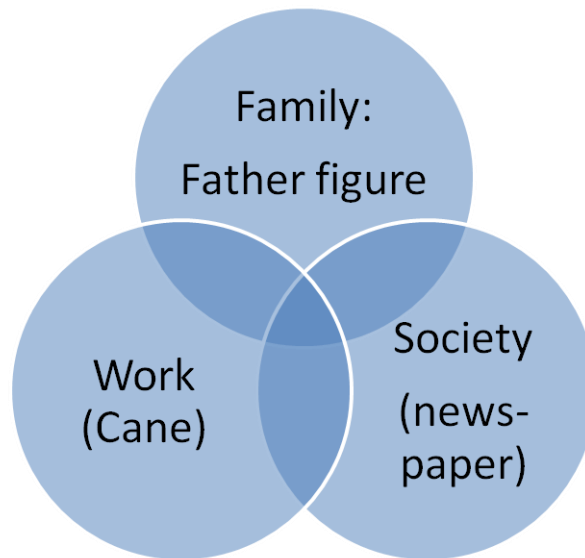


Figure 2. Kafka's 'power' imagery concentrated in authoritarian father figure.

Each of these inter-linking spheres of power, all of which are oppressing the man turned insect Gregor, are effectively merged into a single figure of authority by the writer. The linguistic end product (wave 5) thus showcases the writer's cognitive intention: to show the constrictive effects of overlapping pressures in family, professional and societal spheres on an individual, which is influenced (at wave 1) by the writer's own worldly experiences in dealing with a highly patriarchal father figure and parents who, as Beicken highlights in another of Kafka's letters (2007: 57), were always chasing after him: "I always felt (that my parents) were constantly after me..." It is this sense of unhealthy pursuit which is symbolized by Samsa senior's threatening usage of both the newspaper and the cane to force Gregor back into his room. The reader's last escape option from the nightmarish finale that threatens comes then in the form of the sister whom Gregor seems to have such a special relationship to. As shall become evident in the conclusion section of this analysis which here follows, it is a confounded hope.

3.4. Conclusion: Negating the Reader'S Hopes for a Re-Transformation

From progression to conclusion of the main character's beastly dilemma, Kafka maintains the (albeit threadbare) hope in the reader that Gregor Samsa may at some stage return to his normal human status. The re-transformation is the innate desire of a prototype reader who has taken an entirely bodily identification with Gregor through the writer's emphasis on the 'container' image schema. But as the story nears its conclusion, as Gregor begins to neglect the food that is put out for him and feels entirely alone in a domestic and professional world without an ounce of empathy, it seems, the reader begins to wonder something which entirely justifies Kafka's choice of the insect metaphor: will it even be advisable to return to the status of a normal human being in such ghastly, inhumane surroundings?

By virtually placing the reader inside the container of Gregor's hideous insect body, the reader is constantly left to wonder what final bodily improvement might put an end to this story of human (but ironically essentially inhumane) *tristesse*, and Kafka skillfully positions Gregor's sister Grete as the key persona in this regard. Somewhat freed from the repressive financial and professional triangular relationship which binds Gregor to his mother and father, and glossed with the illusions of Gregor's musical hopes for her which are indeed metaphorically representative of Kafka's own writing ambitions, the sister takes on the role of the saviour. She has, indeed, taken charge of supplying Gregor with his food (Kafka, 2007: 108) throughout the progression of the story 'Metamorphosis'. Even if this task has not been completed with much affection, the sister is essentially the person charged with keeping Gregor alive. All the more shocking is the effect on the reader, then, when after her musical performance for the three visiting gentlemen who have become boarders in the flat (Kafka, 2007: 136), Kafka's sister is the family member who first suggests that (Kafka, 2007: 138): "we have to try and get rid of it. We did as much as humanly possible to try and look after it and tolerate it." The triple salvo of the impersonal 'it' usage by Kafka removes Gregor completely from any semblance of humanity, and with it the last lingering reader hopes for a positive finale to Gregor's ordeal. That it is the sister to whom Gregor is so strongly attached, and who has just recited a musical performance on her violin to which he feels so artistically bound, who gives the reader this final certainty is especially shocking. In receptive terms, thus, the ending promises as much cognitive activation through a variation from the standard – by negating the potential reversal of Gregor's situation – as the beginning did by abruptly producing it in the very first sentence. In the aftermath of his sister's damning words, Gregor turns around and returns to his room – the final return to the 'container' which is such a recurring image schema throughout the story.

From being a place of life and a place *to live*, the room now very shortly takes on the form of another container – that of a coffin. Claustrophobic imagery and word choices (wave 2 and 3) on the part of Kafka insinuate that Gregor's death – both as an insect and as a human being, is near (Kafka, 2007: 141): "What now? Wondered Gregor, and looked around in the dark. He soon made the discovery that he could no longer move...He remained in this condition of empty and peaceful reflection until the church clock struck three a.m. The last thing he saw was the sky gradually lightening outside his window."

A number of receptive and productive level linguistic observations are crucial in the description of Gregor's death. Firstly, the funereal word choices imprint on the reader's cognitive impulses the impression that Gregor's death, and by extension the story's conclusion, are near. Secondly, the time of his death is at precisely three a.m, which is coincidentally (or not) also the number of family members who now remain alive. Finally, Kafka shows first signs of a lightening of the sky at the precise moment when Gregor takes in his last sight. It is a final look out of the futile window to the unattainable outside world. The improved weather is also something which will be accentuated by the writer at the very end of the story. At this stage a rather melodramatic, almost self-pitying imagery is chosen here for Gregor's demise, with the insect's death seemingly bringing light and improvement to the three remaining members of the family. But why did Kafka choose to create this receptive impression in the reader at such a decisive stage of the story?

Deducing an answer to this central question employing the 'Wave Method', it is fair to say that Kafka likely chose a production level usage (waves 2 and 3) of all three features discussed above to reinforce the cognitive writer-reader dynamic with the reader at the most

important stage of the entire story – where Gregor's hopes of becoming a human being again are finally and tragically dashed. The word choice bearing over into a funereal atmosphere just ahead of Gregor's final demise is a skilfully utilized linguistic mechanism to build tension, but also to imprint in the reader's mind an absolutely new question as the first one (will Gregor become human again?) is finally erased: that being, why has Gregor never actively fought against his imminent death? By focusing on the dark prelude to the final death, then mentioning the three o'clock death hour, and finally showing a lightening of the sky when Gregor dies, signifying the dawn of a new, likely better, day, Kafka cleverly hits home his cognitive message as if it were a rusty nail into Gregor's (invisible, and yet omnipresent) 'container' coffin. Kafka's linguistic usage (wave 2 and 3) here implies the primary metaphor which derives from shared human experience; that darkness is negative and light is positive. According to Kafka's linguistic choices, the family simply thinks it is better off without the insect Gregor. The cognitive message offered by the writer here is a stark version of reality, indeed. One far removed from any hope of a reversal, however small or subconscious that hope may be, which Kafka has been building up cleverly in the reader. As Beicken (2007: 76) finds: "His (Kafka's) 'Metamorphosis' destroys every fairytale schema of the magical reverse metamorphosis and negates related reader hopes, even if those were only activated subconsciously." Having thus come to the heart of Kafka's cognitive intentions in implementing the linguistic usage indicated above, it is possible in this case to link this intention directly to the writer's (wave 1) worldly input and own family surroundings. Mueller (2009: 58) writes that "Kafka had shortly before (beginning the story), at the start of October, made the experience that his favorite sister Ottla, who normally always took his side against their father, moved to the side of the family." This notion of betrayal by a sister is then clearly reflected in the writer's created reality within the fictional blend of the man turned insect, who is now finally dead.

With Gregor then well and truly deceased, the final receptive question that remains open to the reader is: why has this terribly tragic metamorphosis taken place? Once again the receptive answer is to be found in the linguistic end product (wave 5), as Kafka brings his story to a stingingly critical conclusion with the aforementioned intensification of the implied primary metaphor (dark is negative, light is positive). In this case, when the three (once again the emphasis on this number is almost overwhelming, despite its simplicity) remaining family members leave the flat for their first walk together in months, (Kafka, 2007: 145) "the carriage in which they sat was flooded with warm sunshine." What might be seen as a simple case of pathetic fallacy in conventional literature analysis is in this case an almost blindingly clear spotlight shone by Kafka into the conscience of the family. Having done nothing to help their struggling son and brother Gregor, the family is now pictured (Kafka, 2007: 145) "sitting back comfortably in their seats." The spotlight has become shrill and unbearable for the reader.

The receptive focus on a simple physical, outwardly description is most certainly centered on the hearts (or lack of heart) of each of the remaining three family members; how indeed, can such inhumanity exist within such a seemingly normal family? Kafka thus concertedly employed the linguistic mechanisms at his disposal to create an overall impression within the reader's mind, one which is not at all positively inclined towards the parents and the sister of Gregor. Whilst Gregor's passivity upon becoming an insect may be explained through his lack of means as an insect, as well as his unsupportive family surroundings, no such excuses are allowed by Kafka for the remaining family members. They

have now symbolically also broken out of the confines of the flat-container, but without Gregor in their ranks.

What might be thought of as a terrible relief for the claustrophobia-induced reader becomes a further restriction in that our focus is entirely centered then upon the mind ‘containers’ of the three remaining family members. There the reader looks in search of the essentially un-answerable question: why did none of the three show any humanity in Gregor’s ordeal? From the Gregor-centricity of the entire story ‘*Metamorphosis*’ up to this point, brought about by a concentration on the container that was Gregor’s horribly effective (in cognitive receptive terms) new body, Kafka now necessarily shifts the focus to the remainder of the Samsa family, thereby effectuating his cognitive intentions of showing the self-constricting circles which domestic and professional pressures have drawn around his tragically deceased hero. The productive level choices of the author indicate, quite clearly, that a new, brighter future is now set to begin for the Samsa family.

Thus, Kafka’s choice of a flower metaphor (at waves 2 and 3) for Grete in the finale of the story has a powerful message to convey, namely that a new beginning now seems to be awaiting for the three survivors of the terrible fictional transformation: (Kafka, 2007: 146) “she had bloomed into an attractive and well-built girl.” The flower of spring, the flower of youth, the flower of peace, but also the flower of irony is planted in the reader’s mind by Kafka’s simple cognitive choice of this very basic metaphor, which shows no great variation from the standard (as can be seen in table 6 which follows). But there is no need for complication here. Kafka very simply illustrates with this flowery metaphor, seen indeed through the eyes of the parents, how positive the family future has supposedly become after Kafka’s death. The transformation from the beginning of the story, when the entire family was dependant on Gregor’s income to survive could not be more marked.

Gregor’s sister then undergoes a parallel, if slightly less visual transformation in the eyes of the Samsa parents. From being frequently annoyed with her for being “a somewhat useless girl” (Kafka, 2007: 117) to becoming the new hope of the family at the end of the story (Kafka, 2007: 146):

“Falling silent and communicating almost unconsciously through glances, they thought it was about time to find a suitable husband for her. And it felt like a confirmation of their new dreams and their fond intentions when, as they reached their destination, their daughter was the first to get up, and stretched her nubile young body.”

What is described in an entirely neutral resonance – the ‘new dreams’ and ‘fond intentions’ of the parents for the ‘blooming’ daughter, is receptively taken up by the prototype reader as a sinister, self-interested plot to marry their daughter off to receive financial benefits of their own. Indeed, the development of the story up to then has virtually confirmed that these are almost surely the intentions of the parents. The reader’s cognitive apparatus thus subconsciously merges the experience of the recently deceased Gregor and his treatment at the hands of his parents with the second case of their daughter. Kafka’s description of Grete’s ‘nubile’, flower-like body at the very end of the story contrasts wonderfully with the hideous monster, no more, which awoke at the beginning to our shocked disgust. Receptively, the prototype reader is at once relieved and appalled; the latter by the parent’s terribly egoistic attitude in now placing their focus on Grete as the source of family income, the former by the outwardly appearance of beauty and serenity which Gregor’s sister transmits.

Table 5. Use and effect of ‘flower’ metaphor in conclusion of Kafka’s ‘Metamorphosis’

Actor	Linguistic device	Receptive effect	Productive choice	Cognitive intention	Worldly input
Reader (receptive)	‘Flower’ metaphor.	Flower activation produces receptive contrast with ugly insect at start of story.			Own experiences of the beauty of flowers blooming.
Writer (creative)	‘Flower’ metaphor.	Possible feedback from publisher, critics and readers.	(Kafka, 2007: 146) “she had bloomed into an attractive and well-built girl.”	To provide contrast at end of story; beauty of flower metaphor against the hideous insect metaphor chosen at the start of the story.	Kafka’s own experience shortly before writing of story in which his sister sided with parents rather than him.

Kafka, in bringing the story to an entirely fitting ending with the last word ‘body’, again concentrating on the ‘container’ image schema which has had such a central linguistic focus throughout, has created a story in which one family member is effortlessly exchanged for another when he ceases to be useful. This reverts back to Kafka’s worldly input and cognitive intentions of criticizing a society based on superficiality and outer looks, and one not overtly concerned with inner love and familiar caring. As Schwarz succinctly writes in his afterword to Kafka’s magnificent story (Kafka, 2009: 78): “Above all the story showcases the tyranny of an economic system, which is based on the slavery of the soul, and which only recognizes one law, the law of profit.” A story then, which is as relevant today as it ever was in Kafka’s lifetime, and which unfolds an almost magical writer-reader dynamic with the long deceased author from Prague.

A final consideration must then go to the unresolved question which Kafka purposefully left open to the reader’s imagination: why transform a man into an insect? Why indeed did this transformation take place? The reader is given no explicit hints, but must use their own cognitive ability and deduce the answer from the implicit meaning of a story that has become part of literary world heritage for its creative usage of an extended metaphor; that of the man turned finally and fatally insect. This piecing together of meaning both feeds from a long literary tradition of transformations, and also shows the necessary creative variation that captures the reader’s cognitive attention with its failure to bring about the final reversal of the hero’s metamorphosis. When Hogan (2003: 80) finds that: “the two transforming conditions that differentiate childhood art from adult art: technical mastery and audience awareness”, we can after this writer-reader dynamic analysis safely suggest that Kafka performed both with exquisite skill and created in his relationship with the reader a final, fitting burst of understanding: Gregor was transformed because his professional and domestic worlds transformed him, and then never gave him the chance to return to humanity. As Fechter (1952: 488) explains: “*Die Verwandlung* ist das erste Beispiel des deutschen Surrealismus, Abloesung des Stofflichen von den Bindungen der sogenannten realen Welt, Verneinung alles

positivistischen Glaubens an eine alles verpflichtende rationale Ordnung der Natur...’’⁸ The reader’s cognitive link to the real world mentioned by Fechter is thus severed ostensibly by Kafka at the very start, but it is never essentially broken. Gregor Samsa’s metamorphosis is essentially a worldly one, and Kafka, the writer struggling to find enough time to write his magical stories in between professional commitments, could not have been better placed to write it.

CONCLUSION

Having thus examined one of the essential 20th Century literary works, the current section aims to draw together key findings of this study. But before moving on to these most significant findings derived from the ‘Wave Method’, it is opportune to consider the words of Mario Vargas Llosa when he said that:

“When writers are alone, to interrogate themselves, they know that as much effort as they put into it, and as far as they got, the work still remains below the ideal of absolute perfection and absolute beauty which a writer, and any artist, always want to achieve. But the marvelous thing about literature is that it is the magic which we find in order to live these worlds of absolute perfection, absolute coherence and absolute beauty which we can never live in the reality. When we read ‘Don Quijote’, or ‘War and Peace’, or Joyce or Faulkner, one of the great works of literature, we don’t only read but we effectively live this reality through a character, a reality where everything is beautiful, even the most ugly, cruel things. During the time of reading we are able to abandon the world and enter these perfect worlds, I think that is one of the marvellous things of literature.”⁹

Not only does this show the restlessness and discipline which drives a great writer like Vargas Llosa¹⁰, but it also displays the extent to which a reader is transformed into a state of bodily identification with the main character in successful works of fiction.

From the very outset of the Results the ‘Wave Method’ analysis of ‘Metamorphosis’ has shown Kafka’s reliance on the transformed body of Gregor Samsa in making a heightened impact upon the reader’s receptive system. This choice of the ‘container’ image schema brings about the effect of ‘embodiment’. Indeed, the fictional blend which is created by the author is of a counterfactual nature, but works with a real sense of authenticity due to the writer’s choice of resonance in the writer-reader dynamic. Thus, the prototype reader knows

⁸ “The ‘Metamorphosis’ is the first example of German surrealism; removal of the material world from the connections of the so-called real world; negation of all positive belief in an all encompassing rational order of nature.”

⁹ Translated from the Mario Vargas Llosa speech at ‘Conversacion en la Universidad’, event during the ‘I Semana Complutense de las letras’ in Madrid on May 4th 2011.

¹⁰ A notion discussed in my article published on May 7th 2011 in El Pais English: <http://blogs.elpais.com/transiberian/2011/05/mario-or-the-great-writers-wrestlessness.html> Extract from article: “And the master did not disappoint. He talked of the writer’s omnipresent insecurity. He joined together beautiful sentences, as if indeed writing in the air. And he complained that the Nobel Prize has taken away his time for writing, and at times even his energy to do so. And therein lay the essence of Mario’s restlessness on this balmy Madrid spring evening. No writer, he said then, could ever be completely satisfied; with their work, with the time they’ve invested, with the effort they’ve made.”

that this is physically impossible, but wants to believe in the blend because of the harsh reality which has befallen the main character in Kafka's 'Metamorphosis'.

This linguistic mechanism chosen by the author therefore effectively places the prototype reader into Gregor's body to bring about the receptive effect which Vargas Llosa was referring to in his above mentioned talk in Madrid. As Hogan (2003: 73) found: "These standard cases (thus prototypes) are often altered in one or another particular way in the works that are considered lasting...". Hence Kafka's focus on the body of an insect very much serves to create disgust and repulsion in the receptive equation of the writer-reader dynamic. When Oatley (1992: 107-8) wrote that "people can mentally simulate the plans of others and understand their emotions, just as they can run simulations of their own plans...", he also added to this the following specifying sentence that: "we need to postulate that a person can identify with a protagonist taking on goals and plans as if they were his or her own as a narrative unfolds." On the other hand, Tan (1996: 98) concluded that an interest in narrative only exists if the receptive party is able to envision a number of possible outcomes as a result of the narrative, and also if it is continually possible to test these outcomes in terms of probability. Finally, Tan thought it necessary for a sense of progress to be made towards a closure, or what he referred to as the preferred final outcome. It is noteworthy also in this regard to consider that Hogan (2003: 166) identifies two major features which engage readers in the narrative: "The first is the ongoing appraisal of changing conditions relative to goals. The second is the activation of episodic memories." The question which developed as the current study progressed, thereby showing that outcomes were not being predicted but rather ascertained, was the following: does a reader subconsciously create cognitive questions with regards to the outcome of the novel during the reading process? The response in the case of the prototype reader was that this was indeed the case, and that these questions were then actively resolved in the reading process; from title, to beginning, progression and conclusion of a work of fiction. These cognitive questions, developed subconsciously in the reading process and discussed in detail in the Results, are thought by this study to be of central importance in what Hogan (2003: 173) refers to as the 'orientation threshold': "Passing beyond the orientation threshold is literally what keeps our attention. Without that we drift away, lose interest, and stop reading."

It was mentioned in the analysis that the English translation of Kafka's originally German language 'Metamorphosis' employed a translation of 'monstrous cockroach' for the German '*ungeheures Ungeziefer*'. The translator and linguist interviewed for this study, Enrique Bernárdez (2008), found in this regard that:

"I think in that case, the translator has done too much, because Kafka never wanted any particular animal to be identified. So if the translator writes cockroach, then the interpretation of the whole story is being led in a certain direction, so that you identify the animal already at the beginning. That is wrong; I think 'bug' or something would have been a better translation. I don't know how it is in the Spanish translation, but I think they use a word like 'insecto monstruoso' or something like that. This is much better. Otherwise the translator is guiding you too much in a certain direction."

What emerges from this example, which is found in this study to be of central cognitive importance in a receptive regard due to the central nature of the insect in this story, is that the translator (wave 4) and by extension publisher can have an equally important input in the

writer-reader dynamic. Thus for example the German language reader of this story would have one particular set of cognitive activations and associations, depending also upon their worldly experiences, whilst the English language reader will necessarily have another, in this case more specific, activation. In bringing a piece of fiction to a far broader audience, the work of the translator is indeed of much importance in the entire creative writing equation, but it may also bring about a different cognitive reading experience in different languages, and by extension different cultures.

Thus it has here been seen that the ‘Wave Method’ presented has not only a firm grounding in existing linguistic theories, but can also provide a valuable form of coming to what seems to be an accurate interpretation of the writer’s cognitive intentions in penning a particular work of fiction.

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Chapter 84

APPROXIMATIVE SPACES AND THE TOLERANCE THRESHOLD IN COMMUNICATION

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ABSTRACT

The paper substantiates the concepts of meaning re-conceptualization and approximation in communication as put forward in Lewandowska-Tomaszczyk (2010, 2012 in press). The present discussion locates the phenomenon of approximation in cognitive domains and shows the contents of approximative spaces, allowable substitutions in the domains as well as their tolerance threshold, and discusses the circumstances in which this process is evidenced in communication.

Keywords: approximative spaces, communication, polysemy, reconceptualization, similarity (resemblance), synonymy, tolerance threshold

1. INTRODUCTION

The concepts people use in communication exchanges are more often than not only partially overlapping. There are a number of reasons for such a state of affairs (section 3.1.). The paper takes up and extends the notions of *cognitive domains* and *mental spaces*, first proposed and elaborated on in Cognitive Linguistics by Gilles Fauconnier (1985). Its focus is on presentating the relationship between the content of a prototypical (default) cognitive domain on the one hand and its on-line dynamicity in ongoing interaction on the other. The primary role in this process is attributed to the nature of meanings, used and exchanged by the Speaker and Addressee. The crucial concepts in the exchange are the semantic relations of *identity*, *similarity (resemblance)* or *equivalence* between forms which are considered identical or comparable by the interactants. The concept of similarity, which is the basis of all categorisation processes, forms a multi-peaked radial category space with a number of *tertia*

comparationis, or points of reference, which serve as conditioning parameters in interaction (see *Common Communicative Platform* section 5 and the *threshold properties* in 6). It is argued (similarly to Shepard 1987 and Gardenförs 2000) that, conceptually, similarity is a mapping of physical distance on a cline between the Speaker's and Addressee's conceptual spaces, containing objects, relations and events. Discourse participants manipulate the distance – either by shortening or by lengthening it, although the prototypical intention of the interactants is to reduce the distance between meanings (Grice's 1975 *Conversational Maxims*). They use numerous strategies (synonymy, paraphrase, polysemy, super-/sub-ordinate category members, etc.) to achieve this communicative goal. Some approximating strategies can appear to be, intentionally or not, a failure when they cross over a conceptual-discourse tolerance threshold (sections 6 and 7), which makes successful communication difficult or impossible.

2. TYPES OF COMMUNICATIVE CORRESPONDENCES

Communication can be either *symmetric* or *asymmetric* (Lewandowska-Tomaszczyk 2012a). Symmetric communication involves using identical (similar) meanings by discourse participants, while asymmetric correspondence assumes smaller or bigger divergence in meanings conveyed by the same form. Fully symmetric, i.e., *closely aligned*, or *parallel*, communication between interactional partners is not frequent. Much more frequent are *asymmetric types* of interaction with two opposing poles, one - more schematic, *coarse-grained approximative correspondence of generalized alignment* on the one hand and an asymmetric *particularization relation*, i.e., *fine-grained alignment* on the other. They form larger bulks of authentic discourses.

There are a number of reasons for such a state of affairs. One of them is the fact that some of our thinking tends to be more *effable*, i.e., possible to express in a language, while a large part of it such as some image-verbal thoughts, visions, emotions or dreams remain more felt than expressed, more imagined than put in words. Katz's Principle of Effability (1978), proposing that every thinkable thought in natural language can be encoded and expressed by a sense of some sentence in language, does not stand up to criticism pronounced by semioticians, philosophers and linguists of different denominations (e.g., Sperber and Wilson 1995). Thus, what is communicated verbally to the addressees is not in one-to-one correspondence with our thinking and intentions. Another crucial parameter of approximation is connected with the language typological parameter – a linguistic type a given system represents, in which some ontological categories are verbally marked and can be expressed, while some others are absent or left non-verbalized in the system. Connected with this is the type of a linguistic construction in which the speaker can (considering the typological differences) choose to convey a message. The construction too symbolizes a particular semantic perspective conveyed by these forms via different *profiling* and cognitive *construal* of a given scene or event (Langacker 1987, 1991).

A stable characteristic observed in interaction is the lack of an invariable symmetry in the scope and range of conceptual-semantic spaces across discourse participants. This condition rests within the sphere of the speakers' *knowledge of the world* and the breadth of their respective concepts. *Speaker's intentions* too are relevant here as the degrees of expression of

thought are also a matter of individual intention. The speaker may not wish to share all thoughts, feelings, etc. linguistically (or otherwise) with the interlocutor. Last but not least, the phenomenon of approximation is related to the speaker's *linguistic repertoire*. First of all, speakers have as a rule varying language repertoires which overlap to different degrees and some may be more and some others – less, faithful portrayals of the speakers' thoughts which they are prepared to share with others.

Apart from this basic conditioning of communicative approximation, there are also other, psychological and psycholinguistic factors, like memory lapses, interruptions, and the like, which are partly responsible for the processes of approximation and re-conceptualization.

3. IDENTITY, SIMILARITY, EQUIVALENCE?

Even when expressed in the same linguistic form, meanings different discourse participants use in a communicative act are most frequently not identical. The first approximation phase runs between a stimulus and its mental representation. Speakers then observe and actively produce conventional forms divergent from their original thoughts (e.g., in politeness strategies, due to poor linguistic repertoire, in consideration of face work and the like). In such cases, they tend to resort not to what they would consider the first and most adequate expression of their thoughts (which would not always be possible as pointed out above also for language-specific reasons) but they use a linguistic form, which approximates rather than fully reflects their communicative objective. In other words, the speakers choose, volitionally or automatically, a second, third, or n-th best of what they wanted to convey.

3.1. Liberty at a Linguistic Sign Interpretation

The semantic scope of an individual interactant's meanings leaves an uncovered space in the interpretation of a message (a sign), as a part of a respective organization of mental structures. Its exponent is a system (language, visual system), which is complemented by *inferential structures* – an ability to complement a message with further (unexpressed) thought(s) or image(s). A sign then is by its very nature *metonymic* (only part of the message is explicitly expressed) and frequently *cubist* (message organisation is not necessarily iconic). It can either represent the whole by focusing on its part or it can represent the whole from a number of perspectives and diverse points of reference simultaneously.

There is some evidence of the presence of such originally partly verbalized mental processes with language users. In her experimental findings, Seana Coulson (2000: 12 with reference to Anderson and Ortony 1975) identifies more detailed information in subjects' recall of a message than given in the message itself. Even though they heard the first of the two sentences (1), they particularize it in the task of retelling the same story (2):

- (1) A fish attacked a swimmer
- (2) A shark attacked a swimmer

Another finding (examples 3 – 5, Coulson 2000: 11) refers to the subjects' activation of an object image, in this case, a ball, known to be of a different size and shape in each of the cases, contextualizing it from their knowledge of the world and experience to the basketball, football, and baseball frames respectively, notwithstanding the fact that the form used, as well as its possible core meaning, is invariably a spherical object using in playing games, i.e., *ball*.

- (3) Shah dribbled past his defender and dunked the ball easily
- (4) Joe kicked the ball and smiled as it sailed through the uprights
- (5) Sammy hit the ball right out the park

Such particularizing knowledge frames as the ones above - in this case an activation of an Idealized Cognitive Model (cf. Lakoff 1987) of a respective game – fill in details of the originally uninhabited parts of particular mental spaces.

Some other cases involve symbolic structural and constructional properties in language. Examples include the asymmetric relations between words and their definitions, structural and lexical ambiguities such as in *He could do it* (with the ambiguous *could*), or *Picasso lives here* [non-/metaphoric *lives*] or subtle differences between infinitival and gerundive constructions in English (*Alice started to move/moving her leg*) as well as construal differences forwarded by word order, structural and categorial grammatical difference (*John washed the dishes/ The dishes were washed by John – The dishes wash well*).

Parallel alignment or, in other words, *schematic structure-preserving* representations are primarily present in visual, three-dimensional models of objects, maps, diagrams or tables and express a *resemblance* of different types, although not identity, between a model and a thing modelled. In linguistic exchanges they are used in interactional exchanges between closely cooperating specialists, family members, etc.

Particularisation, i.e., making meanings more precise, involves both conceptual *depth particularization* when the speaker reflects on the meaning and goes deeper into the original context as well as *width particularization* when the meaning is extended to create *new* conceptual links. Frequent examples are scientific and technical definitions, even though the definitional equivalence between the entity named and its definition cannot be considered semantic *sameness*, as for instance in the explanation concerning Einstein's (1905) $E = mc^2$ formula (6).

- (6) In physics, **mass–energy equivalence** is the concept that the mass of a body is a measure of its energy content. In this concept the total internal energy E of a body at rest is equal to the product of its rest mass m and a suitable conversion factor to transform from units of mass to unit of energy. If the body is not stationary relative to the observer then account must be made for relativistic effects where m is given by the relativistic mass and E the relativistic energy of the body.

In such cases as above the definition lacks a relative discreteness of the lexicalised (defined) form, while its wording contains an additive semantic surplus, due to the inferences on individual lexical units used in it and not present in a corresponding single form.

3.2. *Almost and More-or-Less Categories*

I distinguish between two types of structures in discourse: *almost* structures and *more-or-less* structures. This distinction is inspired by an original differentiation presented for two types of mathematical solutions, proposed by Sossinsky (1986), paralleled, as I see it, by the natural language categorization processes.

The *more-or-less* cases in linguistics (sometimes called *approximative solutions* in mathematics) can be defined as ‘an approximation of an exact solution’, in the cases when full meanings are *accessible*. They are approximative by speakers’ intentional choices, by their restricted language code, etc. The *almost* solution in mathematics on the other hand is used in such cases when *no exact solution* exists for a given equation (Sossinsky 1986). Transferring this to language, we would say that in the latter case full meanings remain simply *undetermined* or *vague*.

In language then some meanings are of a more-or-less approximative type when contrasted with their fully accessible sets of properties as in the case of the word *boys* in *Boys like to fight*. Some other linguistic meanings will be of the *almost* type, in which accessible criteria are *either* necessary or sufficient; essential, typical, or else culture-specific or idiosyncratic as in the well-known instance of *game*:

(7) Games are activities which provide entertainment and amusement.

4. SEMANTIC SIMILARITY AS A FUNCTION OF DISTANCE

The concept to be discussed is that of *similarity* (also called *resemblance*). It is used in two contexts. Firstly, in the context of monolingual exchanges, when interactants use the same forms while the meanings they use do not always need to be identical (user-specific polysemies) or in their use of various synonymic forms on the lexical, sentential or paragraph levels. Secondly, in bi- or multilingual contexts, such as inter-cultural encounters or translation, when the interactants or translators employ what they consider translational equivalents on various language levels. Even though the two contexts are most frequently discussed disjointly in linguistic literature, the phenomenon (similarity – equivalence) should rather be perceived in terms of quantitative rather than solely qualitative differences. In the present paper the focus is on the former, while the translational context was discussed in another work (Lewandowska-Tomaszczyk 2010).

I want to propose, after Shepard (1987), that *similarity is a function of conceptual distance*,¹ either within one conceptual space, or across different spaces, where by *conceptual space* I mean, similarly to Peter Gardenförs (2000), *a set of quality dimensions*, either separable (like shape) or integrated with other dimensions (like colour and shape together). Similarly, conceptual spaces are described in terms of *topological geometric objects*. Geometrically, identity, resemblance and difference are captured by the basic notions of

¹ More precisely, Shepard (1987) claims that “there is a robust psychological law that relates the distance between a pair of items in psychological space and the probability that they will be perceived as similar. Specifically, this probability is a negative exponential function of the distance between the pair of items”. (formulated by Chater and Vitányi 2003: 347).

betweenness and *equidistance* (Gardenförs 2000). In logic, these notions are captured by the *near set theory*, whose applications to Content-Based Image Retrieval (CBIR) can be consulted in Henry and Peters (2007). In cognitive and conceptual models the concept of resemblance with the properties common between object and those that differentiate them can be accounted for in terms of varying *construal* and *perspectives* and as different *levels of concept granularity*. Conceptual similarities and differences can also be represented in terms of quantitative (corpus) data, interpreted by means of multifactorial analyses (see Lewandowska-Tomaszczyk and Wilson 2010 for cross-linguistic comparison of emotion concepts). Visualisation of similarity-based conceptual distances can be achieved by different tools (e.g., Lewandowska-Tomaszczyk and Tomaszczyk 2012, and later in the present section, see (9)).

In modeling conceptual spaces we take, after Gardenförs, individuals - people or objects - together with sets of the attributes and properties on individuals to be the primary concepts. Each of the attributes is associated with a particular value set and each value has a certain admissible tolerance region (space), with context-bound upper and lower thresholds. Meanings are thus considered here to be networks with a certain *tolerance space*.

In communication, tolerance spaces are dynamically construed from the level of a conventional prototype up to a (context-specific) tolerance threshold, beyond which a miscommunication or a communicative boycott occurs. The simple concept of say a *tall man* (8) will thus occupy a space of a culturally determined prototype of *tall*, between the spaces *short* and, say, *gigantic* as lower and upper bounds on an *acceptable tolerance region*.

(8)

tall man

GIGANTIC

GIGANTIC [c2]

 tall + 2
 tall + 1
TALL [prototype in context 1]
 tall - 1
TALL [prototype in context 2]
 tall - 2

SHORT

SHORT [c2]

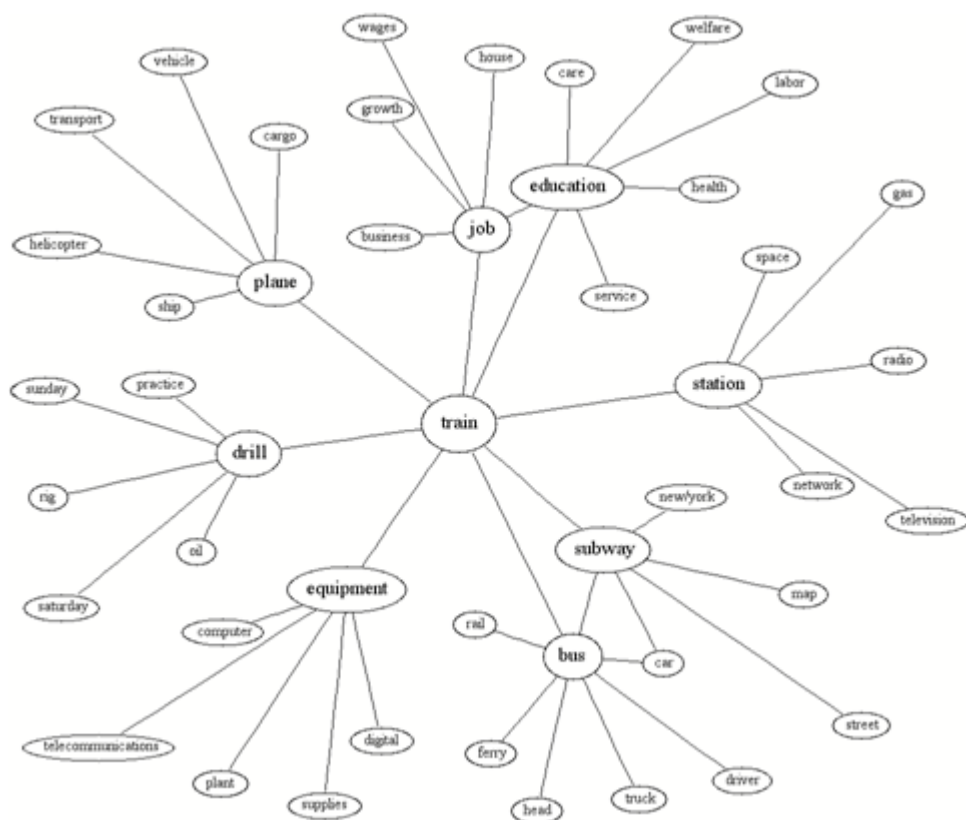
In the structures representing objects and relations described above, some objects which fall *within* a given structure, represent *allowable substitutions*. They have to be *sufficiently similar* for a given activity/discourse objective to allow a substitution. The similarity is perceived and conceived by language users taking various criteria into consideration (Lewandowska-Tomaszczyk 2010). Similarity (resemblance) is perceived in terms of perceptual, functional, axiological, ideological, inferential (logical), etc. criteria. Inferentially,

speakers can refer to metonymic (partonymic), metaphorical, etc. properties and, provided they are shared by the interactants, the properties will be considered allowable substitutions.

Following this line of reasoning we could propose that some concepts tend to go together in utterances, in that they are treated as *substitutable* in some contexts, and form *conceptual clusters*, which show strong similarity links both within the same concept and across different concepts within the cluster. Below in (9), a *clustering network* is presented in an exemplary instance of the multiple polysemous lexical form *train*, as generated from the BNC data. The graph is generated by the tool *Infomap* demo version, developed by Stanford University team and representing *corpus-based vector space models* – *Latent Semantic Analysis*, which employs word co-occurrence matrices.

What can thus be observed is that the concepts such as *train* will be a part of a whole cluster of senses, with a strong position of the notion of *station*, on the one hand but also *subway*, and *bus*, with the foregrounded concept of *rail*, on the other. *Train* is also polysemously linked to *education* and *drill* (training), the latter, again polysemously, associated both with *practice* as well as *oil* (see Lewandowska-Tomaszczyk 2007 for a typology of polysemy). These polysemies are present in English but not necessarily in other languages. For such radial structures what can be identified are the *closest members* (<http://www-csli.stanford.edu/semlab-hold/infomap.html> Latent Semantic Analysis), in which degrees of semantic similarity can be calculated and defined with numerical values.

(9) Infomap *train* cluster



Relevance of such similarity clusters for communication is observed when language users replace one unit for another, which display a closer or more distant semantic similarity as e.g., in *The teacher **practices** spelling with the learners* – *The teacher **drills** the learners in spelling*. It has to be emphasized that such forms (*practice* for *drill* or, in *job* for *business*, *labor* or *service*) are not synonyms *sensu stricto*, but they can function as practical approximations in authentic language contexts, i.e., as synonyms *sensu lato* (see also Tomaszczyk 2012).

4.1. Reducing the Distance: Meaning Precisation

In communicative contexts interactants prototypically make an attempt, with different degrees of success, to reduce the semantic distance to achieve full(er) understanding (examples from Quirk and Svartvik 1980):

(10)

S.2.9

P. 604

a 626 general science, eh, general medicine now I thought was the non-elitist –

A oh NO, it's very ELITIST

a I thought it was the specialists who are elitists

A but general medicine is a SPECIALITY... I mean. m ...general MEDICINE.

Eh people don't . it's very INTERESTING, everybody KNOWS what a general SURGEON is – I mean everybody knows what em – a paediatrician is or a GYNAECOLOGIST..but it's very INTERESTING people don't REALLY know what a general . PHYSICIAN is . it's a PHYSICIAN – it's dealing with TREATING people . who's got DISEASE who don't need SURGERY – and that includes –

B it's quite different from a general PRACTITIONER

A oh YEAH . m . a general PRACTITIONER will refer patients to – ehm a general PHYSICIAN – a general physician well – uses DRUGS . I mean that's his main . you know he doesn't CUT . he uses DRUGS. And he'll treat – he'll treat DISEASES – such as – INITIALLY a duodenal ULCER . 656 ehm – cardiac FAILURE

A following set of properties, typical of a general medicine specialist as opposed to general practitioner, can be extracted from the above exchange:

(11)

Properties of a General Medicine specialist:

elitist

specialist

treats people who have a disease and don't need surgery

uses drugs to treat

The exchange is not exhaustive and leaves the interlocutor with an approximative picture of the differences between the two medical specialities. The questions unanswered refer to the status and position of GP in medicine (*Is s/he a non-specialist? Doesn't s/he use drugs to treat? Does s/he simply refer patients to other medical doctors?...*).

Other examples fall within the realm of definitional approximations. The example below presents an implicational meaning of the phrase *short sighted* (Quirk and Svartvik 1980), with the repeated attempts to decrease the semantic distance between the interactants (12).

(12)

SHORT SIGHTED

S.2.5. p. 311

A do you [d] do you DRIVE

C NO I'm too SHORT_SIGHTED to drive – NO

A what with GLASSES you can wear GLASSES

C OH YES I WEAR them but I'm EVER so short-sighted even with GLASSES
on

B INSURANCE - - - yes I don't really UNDERSTAND that Jacqueline actually
I thought glasses could normalize almost ANYBODY's vision

C well they CAN'T ACTUALLY

B OH

a why not

C well because I'm just too – haven't got the CAPACITY to

B obviously they can't if you're BLIND there must be SOME limit

C (laughs) WELL I suppose I'm semi DEMI SEMI-PURBLIND then

B SAND blind a nice word we had last WEEK

a [m]

C YES cos AFTER all I can – YOU know I can READ - - - I can't judge
DISTANCE at ALL

B THAT'S interesting does that mean that one of your eyes is different from the
OTHER one cos that's all done by SCHOOLS

C well YES but I think you KNOW I didn't have GLASSES till I was ten I
never really developed stereoscopic VISION – I was one of those CHILDREN
who are always falling DOWN

The analysis uncovers the following network, in which the relevant concepts adopt the dynamic values:

(13)

FULLY SIGHTED

Vision perfect (Agent can drive with no correction)

SHORT-SIGHTED

Vision imperfect

Vision can be repaired with glasses (Agent can drive with correction)

'SAND' BLIND [DEMI SEMI-PURBLIND]

Vision imperfect

Distances misevaluated

The crucial definitional part of the latter condition turns out to be the particularization of the default from:

Vision can be corrected with glasses

into:

Part of vision - crucial to driving - cannot be corrected (Agent cannot drive)

This property opens up a similarity space between *sand blind* and (*genuinely*) *blind*:

BLIND

Absence of vision

Vision cannot be repaired with glasses (Agent cannot drive)

What has to be emphasized is the fact that interactants use approximative, underdetermined senses in their exchanges and yet these meanings are often considered *sufficient for the context in which they are used*. Discourse participants can thus be satisfied with the fairly coarse-grained level of semantic specificity in their exchanges. Linguistic markers of approximateness are numerous and are often used by language speakers to signal the divergence from the level of symmetric (parallel) alignment. The markers include conditional clauses, phrases such as *so-called*, *you know*, *I don't need/want to mention the fact that*. The intentional use of vagueness, ambiguity, or implicit reference to background knowledge are also common discourse strategies in such cases.

Language users make an attempt to reduce the distance between the scope and range of the speaker's and addressee's meanings by making them more precise when needed, i.e., when they are able to, they see a reason to do so or when they consider it relevant to the interlocutor as in self-corrected utterances *He came in or rather slipped*. Nevertheless, this does not always take place and as a consequence, not always would full comprehension be achieved.

The conditioning for *semantic approximation* is exemplified in authentic language data and analysed in the following section.

5. COMMON COMMUNICATIVE PLATFORM

5.1. Parameters in Approximative Communication

From the above discussion we can conclude that approximative communication, Gestalt in nature, aims either at best approximation possible under given conditions or at more-or-less communication.

In the Polish example '*planujemy potężne burze i możliwe podtopienia jutro*' Eng. 'we plan (for) huge storms and possible flooding tomorrow', the Speaker chooses the form implying a conscious planning on his part, from the semantic field of futurity, even though his agentive role in such a scenario is naturally questionable.

The Speaker can also choose an approximative form for rhetorical and emotive purposes, to impress the audience, surprise them, etc., or for connative reasons, to persuade the audience or impose an ideology. This frequently takes place in the trading scenario in the case of advertisements.

The common technique is understatement and the use of information selectively (*We sell the best beer*). In some other contexts language is produced automatically in chunks, predominantly in spoken discourse, with weaker control by the Speaker, so the outcomes are certain conventional routines (e.g., *I'm sorry*), not necessarily in one-to-one correspondence with the nuances of relevant intentions.

In the examples to follow (ex. 14-16), extracted from the spoken subcorpus of the National Corpus of Polish, the discourse markers of approximateness used are in the form of distancing markers (*tak zwane* 'so-called'), making resort to a common pool of knowledge (*no wiesz* 'you know') (14), introducing negation for rhetorical reasons (*już nie wspominam* 'I don't even mention') (15), or imposing a hypothetical or even possibly counterfactual but probabilistic scenarios (inviting invalid presuppositions) as in (16), or in numerous other cases, using vague, ambiguous or not fully determinate expressions as in (17) in the section to follow.

(14)

A: to jest coś takiego że u nich jest już to wykształcenie wyższe u nas dopiero jest po magistracie..

B: nie u nas też jest wyższe po licencji. normalnie tak? no to jest **tak zwane** wyższe tylko **no wiesz** takie no. zawodowe no..

A: 'with them it [BA diploma] counts as tertiary education, while with us – you are a graduate after you have your MA'...

B: 'No, we also have tertiary BA education diploma after we graduate from a licenciate (i.e., BA) programme. It is also **so-called** higher education but **you know**, rather vocational'

(15)

już nie wspominam o wyposażeniu tam ale chodzi wiesz o takie [...] zawieszenie
'I don't even mention the interior design but the thing is alignment'

(16)

bronimy krzyża

'we defend the holy cross' [*defend* implies a real or imagined enemy]

6. CONSTRAINTS ON SENSE DIVERGENCE: THE TOLERANCE THRESHOLD

Linguistic modification phrases can have a fairly wide scope of reference, e.g., the nominal phrase *red pencil* can refer to the pencil surface, pencil graphite part or both (see Langacker's 1993 for *active zones* or *reference points*).

The phrase is underdetermined outside the context even though it refers to a fairly steady element in our surrounding. Other lexical combinations are subject to even more varied possible interpretations, which is one of the sources of semantic approximation. The example

below contains one such example referring to the content of the forms *bicycle* and *peasant's bicycle*:

(17)

I have finally learned what upset Jiang and Miss Li so much about my choice in bikes. I thought my bike looked very standard, exactly like 95 per cent of all the other bikes in Chengdu-black, 28 inches, a man's, no gears of course, the caliper lock on the back wheel. I chose it over a dinky 24-inch woman's model like Miss Li's because it reminded me of my own Raleigh (on which, I hear, Chinese bikes are modelled). But this week, as I was getting on my bike outside the Foreign Language building, a student in the department came up and started chatting. His eyes kept straying to my bicycle. Finally he touched it and said, "*Why did you buy a peasant's bicycle?*" "*A peasant's bicycle?*" I asked. "*What do you mean?*" He showed me the two extra steel rods that run between the hub of the front wheel and the centre of the handlebars. Of course I had noticed them, but I didn't know what they were for. "*These are to make the bike stronger, for carrying heavy loads,*" he explained [italics added]. I realized then, something Jiang and Miss Li would never have told me: I was essentially choosing a bike much *below my status*. Not just a woman, not just an intellectual, but a foreigner-riding a peasant's bicycle. Slowly, slowly, I am beginning to be able to discern the Jaguars from the Honda Civics.

(17a)

peasant's bicycles

(Sources: <http://strebeigh.com/BikesChina.aspx>,
See also: <http://www.youtube.com/user/tofugalaxy>)



The prototypical meaning of *bicycle* evokes a mental image of a vehicle having a frame mounted on two wire-spoked wheels, handlebars for steering, brakes, and two pedals, even if the prototypical details will be culturally modified. The Genitive Plural of the English Noun (*peasant's* here) is notoriously ambiguous among the possessive, agentive, and attributive

senses and the Speaker in (16) acknowledges this multiple ambiguity (approximateness). The socio-cultural knowledge frames concerning the (Chinese) context, characteristic of his interlocutor, impose precision on the conceptual (default) prototype to evoke a more fine-grained image of a vehicle with an extra steel rod attached between the handlebars and the front wheel. As can be identified in large internet visual resources exemplified in (17a) above, there is more than one technical instantiation for the ‘peasant’s bicycle’ possible to construct but the interlocutor chooses to constrain them to one such type. On top of that, a social (pejorative in this case) meaning evolves as an integral part of the more precise meaning.

It can be inferred from the narrative in (17) that the divergence in the interlocutors’ meanings cannot be infinite. The phrase *peasant’s bicycle* can be meant literally or metaphorically with reference to objects, but would be less conventional (thus less frequent), even though naturally not impossible, to be used with reference to abstract concepts. The divergencies are limited by the *degree of resemblance* of particular linguistic signs used in the communication act. Resemblances are culture-, context- and, eventually, speaker-specific. They are both qualitative and quantitative and the variables are not fully, but only by default, predictable outside of context. The original linguistic sign is thus, to a large extent, a determinant of the size of *the possible tolerance spaces with respect to particular attribute values*.

Passing over a *default tolerance threshold* can cause a communication breakdown. Alternatively, the interactants may negotiate the threshold in some contexts and cross the default boundaries (see (18) and (20)). The threshold can either be lowered or heightened (i.e., approximative areas will be narrowed down or widened respectively), depending on the contextual (including attitudinal) factors of the interaction participants. One of the interesting linguistic tests for some of the threshold values can be metalinguistic negation such as in *Tom is not tall, he is very tall*, or *Tom is not very tall, he is tall*. Metalinguistic negation in such cases functions as a threshold determinant for the conceptual boundaries characteristic of individual speakers.

6.1. Inventory of Threshold Properties

The threshold properties are divided into qualitative and quantitative properties. The meanings used cannot diverge beyond them even though the divergence point is not easy and sometimes impossible to determine precisely. The features cover the following criteria or attributes:

- Qualitative features - shape, topology, function, value
- Quantitative features [near sets] – numbers and frequencies of feature values

The objects within the threshold determine resemblance models between the objects compared in monolingual communication or between SL and TL. The resemblance models contain structures representing objects and relations. Some objects considered *sufficiently similar* for a given activity/discourse within particular structures represent *allowable substitutions*. A typology of allowable substitutions is presented in (18) below.

(18)

Typology of Approximative Allowable Substitutions

- CONSTRUALS
- PERSPECTIVE 1 $\Leftrightarrow$ PERSPECTIVE 2 within the same Event structure. An instance of this type can be *Syntactic coercion* (extending conventional uses or reinterpreting them in terms of novel contexts as in *They laughed* > *They laughed him off the stage*)
- EVENT *figurative* $\Leftrightarrow$ EVENT *literal*
- *Creative* $\Leftrightarrow$ *Formulaic* $\Leftrightarrow$ *Cliché* (retaining the same resemblance structure of objects and relations)
- OBJECT $\rightarrow$ OBJECT
 - from the same conceptual domain:
 1. *hyponymy* = *addition/deletion of meaning*
 2. *granularity* (parallel, increased or decreased)
 3. *metonymy* = *part* $\Leftrightarrow$ *whole*
 - from adjacent conceptual domains (*conceptual clusters*)
- mapping from different domains (*metaphor*)
- (*near*) *synonyms*
- (*near*) *equivalents*
- *word* $\Leftrightarrow$ *definition*
- *word* $\Leftrightarrow$ *examples (list)*
- *prototypes* $\Leftrightarrow$ *peripheries* (an instance of asymmetric skewed alignment)

In discourse sufficiently similar meanings are tolerated for practical reasons – when they bring about more-or-less identical effects even though there is always a construal change (re-conceptualization) in such re-phrasing. The original subjective interpretations are either quite close or fairly distant from the original thought and intentions of the author. In some cases the interlocutors are satisfied with a fairly general level (smaller approximative depth) of communication.

Similarity measures are based on the resemblance criteria with *almost* meanings tolerance thresholds lower (i.e., larger divergencies are tolerated) than in the case for *more-or-less* meanings. A case of an *almost* meaning is exemplified below:

(19)

- There's a particular way you have to make the stroke for it to look good. An aesthetic thing has a certain set, a certain character, which I can't define. Because it couldn't be defined made me think there was nothing to it. But I learned from that experience that there is something to it - and it's a fascination I've had for art ever since.
- Yeah, I see

For the sake of completeness one has to mention the quantitative criteria, which serve as another point of reference in the investigation of the satisfaction values of similarity in

communication and which were discussed elsewhere in the context of translation studies (Lewandowska-Tomaszczyk 2012a). In monolingual contexts the typology of criteria remains identical even though particular approximateness types may adopt different values.

(20)

Typology of communicative (including translational) quantitative criteria

- (i) frequencies of occurrence of lexical units (e.g., synonyms or paraphrases)
- (ii) keyness
- (iii) frequencies of syntactic patterns (complex/simple constructions, sentence types and sentence patterns)
- (iv) frequencies of classes of lexical-semantic patterns
- (v) frequencies of types of figurative extensions (frequencies of Source Domains > Target Domains patterns)
- (vi) quantitative cross-correspondences of concepts from the same conceptual cluster

Consequently, the Common Communicative Platform, expressed in terms of similarity/resemblance criteria or threshold parameters thus form *a multi-peaked radial category space* with a number of *tertia comparationis*, or points of reference, of the qualitative and quantitative types, which serve as conditioning parameters in interaction.

7. CONCEPTUAL DEPARTURES

Allowable conceptual departures in approximative strings, implemented in terms of the major discourse semantic operations, i.e., *lexical* or *conceptual replacement*, *extension* or *addition*, *deletion* or *simplification* are all subject to constraints on sense divergence expressed by a respective tolerance threshold. The boundaries in conceptual divergencies are constrained by similarity between particular linguistic signs in terms of perceptual properties, function, emotional value, aesthetic and ideological judgment. Resemblance is culture-, context- and speaker-specific and as such its variables are not fully predictable outside of context but the original linguistic sign is, to a large extent, a determinant of the size of the possible tolerance spaces with reference to particular attribute values. It is interesting to note that such an operation does not involve exclusively, or even predominantly, language. The first studies inspiring the research on tolerance spaces based on the original ideas of Henri Poincaré as early as 1895 and elaborated by Erik Christopher Zeeman in the seventies (1977), described the work of brain neurons and visual perception and their mathematical modelling.

The central part of a network of senses is, as proposed by Gärdenfors, a standard default (prototype or set of prototypes), which, in interaction, allows for a number of allowable departures. The inventory of departures embraces small or marginal (peripheral, frequently irrelevant) departures, and larger, repairable departures on the one hand and major (irreparable) departures, passing beyond the addressee's tolerance threshold on the other.

To reassume, we can propose the definition of *an allowable departure* from a (default) prototype as a maximum departure that a concept can have and beyond which it may suffer irreparable harm.

The risk involved in crossing of allowable departure threshold (*tolerance threshold*) will result in *critical* functioning of an interaction or interaction damage. The lower bounds on the tolerance areas (lowest allowable departures) can be represented by external (physical) noises, communication channel flaws, etc., while its upper bounds are difficult to determine as they depend on internal reasons, creativity, intentions, affect, dispositions and cannot be predicted but are rather determined locally in context.

7.1. Allowable Departures

7.1.1. Marginal Departures

Small, or marginal, departures may be either considered irrelevant for the purposes of an interaction or can be taken as relevant but not crucial. The discourse signal of a departure of this kind is either not expressed, or is signalled by relevant verbal expressions as in *Not quite – but it doesn't matter* or else the change of the topic e.g., *I didn't quite get it but let's change the topic*.

7.1.2. Reparable Departures

Reparable departures are linguistically expressed as self-corrections, other party repairs, negotiation or taking a compromise. They are signalled by *you-guilty* strategies such as *you got it wrong!*, or an array of stronger disagreement markers (see (20)), *You were not clear about it*, or *I-guilty* tactics, expressed inter alia as *I didn't mean it* or *I wasn't quite clear about it*.

(21)

A: Some people say it's not very good for women to play football

B: That's a lot of rubbish!

A: Well tell me what's good about football for women?

7.2. Irreparable Departures

Irreparable departures lead invariably to a critical communicative state, which finalizes in communication breakdown or boycott as in (21) and (22), or else lead to meta-discursive level, when the interactant identifies a clear absence of a joint (co-operative) communicative intention on the part of the speaker (23):

(22)

That's sheer and utter rubbish. This is a flawed document and indeed it comes to very questionable conclusions.

(23)

Well it's absolute rubbish. I am thinking of doing a little more writing now, but talk of retirement is nonsense.

(24)

A: What is wrong with you!

B: Don't fight with me.

CONCLUSION: AREAS OF APPROXIMATION

The Common Communicative Platform, indispensable if the communication is to be successful, must involve degrees of correspondence between the message sent and the message received, in other words the *degrees of satisfaction of the similarity conditions in communication*. The qualitative and quantitative factors presented (see also Lewandowska-Tomaszczyk 2012a) can secure a resemblance between these different classes of *resemblance* (cf. Lewandowska-Tomaszczyk 2010, 2012).

Approximative spaces are at work in all contexts. Areas of approximation between what we see and how we talk about it are rooted in the diversity of the outside world, language users' perception and their thoughts, expressing their personality, background knowledge as well the cultural and linguistic conventions and constraints (cf. Wilson and Lewandowska-Tomaszczyk 2012 for the dynamicity of emotion concepts), followed unconsciously or with full awareness, as well as in the individual needs and preferences concerning the explicitness of thoughts which surface in an interaction. The communicative act can lead to full (aligned) understanding, can be particularized with respect to the prototypical criteria or can express a *tertium quid*, an indefinite third, at a fairly generalized, non-specific level of communication. Conceptual re-sorting allowed consists in the use of synonymy or paraphrase on lexical and discourse levels, definition, metonymy, metaphor, and the like, and can employ allowable substitutions or repairs, or else can use non-conventional choices, beyond a particular conceptual threshold. While the lower-bound approximative threshold can be crossed due to independent reasons such as external noises or problems with hearing, in other contexts irreparable (upper-bound) departures which take place, lead to communicative fiasco. Similarity, measured as a multivectorial model of distance with respect to a particular reference, or *tertium comparationis*, enables communicative re-conceptualizations, which present degree(s) of conceptual communicative overlap, determined in terms of qualitative and quantitative criteria. Thus, meanings do not seem neatly split between literal and others as inferred from Grice (1961). Neither are they fully subject to contextualization as envisaged by Recanati (2004). Instead, they reside as default networks of senses, activated in context, with multivalued marking, dynamically used within or beyond the conventional tolerance spaces and emerging in interaction.

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Chapter 85

WHEN MY EYES ARE ON YOU, DO YOU TOUCH MY EYES? A RECLASSIFICATION OF METAPHORS MAPPING FROM PHYSICAL CONTACT TO PERCEPTION

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ABSTRACT

Many emotional and cognitive stimuli are perceived through the senses, especially through vision. As a result, metaphors mapping to THINKING or EMOTION often incidentally involve PERCEPTION. This does not mean that PERCEPTION is the target domain of the metaphors. In this paper, we present examples from English and Chinese to argue that the role of PERCEPTION in THINKING and EMOTION has led to the miscategorization of numerous metaphors as synaesthetic, when in fact they map to THINKING or EMOTION rather than PERCEPTION. Furthermore, we suggest that differences between the domains of THINKING and EMOTION lead to the supposed division between “PERCEPTION IS RECEPTION” and “PERCEIVING IS TOUCHING”, and we argue against the grouping of these under the heading of PERCEPTION IS CONTACT between a PERCEIVER and a PERCEIVED (Lakoff 1993). This reclassification has the additional advantage of a stricter and more explanatory delineation of the range of metaphors considered synaesthetic.

Keywords: emotion, sensory modality, synaesthesia, synaesthetic metaphor

1. OVERGENERALIZATION IN PERCEPTION IS CONTACT

The goal of Conceptual Metaphor Theory, like most areas of linguistics, is to seek generalizations that are both consistent with the data and that serve an explanatory function. Overgeneralization defeats both goals, in that it lumps together data that belong elsewhere and fails in explanatory functions such as the production of valid inferences, entailments and predictions about possible examples. For this reason, generalizations should always be

questioned and tested, and if necessary, rejected in favour of more explanatory and better-fitting models.

We suggest in this paper that certain metaphors mapping from tactile contact to visual perception do not stand up to rigorous examination, and we propose alternate explanations for the linguistic examples attributed to these metaphors. The metaphors we will argue against include PERCEPTION IS RECEPTION (as in *The view blew me away*), PERCEIVING IS TOUCHING (*My eyes picked out every detail of the pattern*), and the more general metaphor that purportedly connects these two, PERCEPTION IS CONTACT BETWEEN PERCEIVER AND PERCEIVED (hereafter called “PERCEPTION IS CONTACT”; all metaphors discussed in Lakoff 1993). We re-examine the range of examples attributed to PERCEPTION IS CONTACT, and conclude that only a few of Lakoff’s examples in fact map to PERCEPTION, and that these map neither a PERCEIVER nor a PERCEIVED. Instead, these metaphors follow other synaesthetic metaphors in mapping only a scale of qualities (Petersen et al. 2008). As such, we see no reason to posit a special metaphor distinct from other synaesthetic metaphors to account for these examples. Thus, reclassifying these metaphors allows for a more universal and better delineated definition of synaesthetic metaphor.

We argue that all other examples of “PERCEPTION IS CONTACT” can be attributed to metaphors that involve either cognition or emotion: EMOTIONS ARE PHYSICAL FORCES, PAIN IS PHYSICAL INJURY and THINKING IS MOVING/THINKING IS OBJECT MANIPULATION (Lakoff et al. 1991 [with slightly different titles]; Lakoff and Johnson 1999). While these metaphors do not group together all visual or audio metaphors under a single supercategory such as “PERCEPTION IS CONTACT”, we argue that they offer more meaningful generalizations, in that they recognize that the target domain in each case is not specifically PERCEPTION but rather the emotional effect or cognitive intent of the perception.

These generalizations also hold up better cross-linguistically than “PERCEPTION IS CONTACT”, as demonstrated by a comparison of English and Chinese. In general, both languages share associations between perception, emotion, and cognition. Minor differences between the languages fall within the structures predicted by the metaphors we suggest. Occasional major differences, as in EMOTIONS ARE FORCES, reflect differences in the source domain material that is mapped. Even these, however, involve the same domains and the same role of perception in the relevant domains.

In both English and Chinese, then, mappings from CONTACT to PERCEPTION can be categorized as belonging to five different metaphors, each of which we will discuss in turn. To provide the greatest possible consistency and comparability between our various examples, we will use visual instances of perception in our examples throughout this paper. We will note, however, when other sensory modalities are also possible in a given metaphoric usage. In the next section, we look at synaesthetic metaphors such as *a soft red*, which map temperature onto colour, and surface texture onto quality of colour, light or line. These, we argue, are the only metaphors that truly map to PERCEPTION. Since these metaphors have limited mappings, they do not conflict with a definition as either PERCEIVING IS TOUCHING OR PERCEPTION IS RECEPTION – or even PERCEPTION IS CONTACT. However, since these metaphors give no cause to favour classification as any one of the above, we will refer to them simply as synaesthetic metaphors. Separating these synaesthetic metaphors from the other supposed examples of PERCEPTION IS CONTACT simplifies the category of synaesthetic metaphors, and allows for stronger generalizations to be made about this category.

Sections three through six reanalyse the sets of examples that we argue should not be considered synaesthetic metaphor. In sections three and four, we examine THINKING IS MOVING, as in *her eyes fell on the note*, and THINKING IS OBJECT MANIPULATION, as in *she picked out a detail in the pattern*. Both of these, we will argue, necessarily involve mental attention but only optionally involve PERCEPTION.

Section five looks at EMOTIONS ARE PHYSICAL FORCES, which we argue accounts for examples such as Lakoff's *the view blew me away*. In these instances, we suggest that PERCEPTION takes second place to EMOTIONAL EFFECT.

Finally, we will turn to metaphors mapping from PHYSICAL INJURY to perceptual HARM, as in *the hideous colours assaulted his eyes*. These could be attributed to PERCEPTION IS RECEPTION, but this would overlook their connection to other types of non-physical emotional pain, as in *the horrible thought assaulted his mind*.

Overall, we maintain it is not useful to lump all metaphors involving PERCEPTION into one class. Most of these metaphors incidentally involve PERCEPTION, but map directly to cognition (THINKING IS MOVING/OBJECT MANIPULATION) or emotion (EMOTIONS ARE FORCES, HARM IS PHYSICAL INJURY). These observations point to the dangers involved in metaphor classification, and the importance of analysing occurring and non-occurring mappings, comparing languages, and especially looking for explanations in previously identified metaphors rather than proposing new ones on the basis of one or two linguistic examples.

2. MAPPING SYNAESTHETIC SCALES

Some metaphors involve neither emotion nor cognition, but do indeed map directly from TOUCH to other modalities of PERCEPTION. As such, these metaphors can justifiably be termed "synaesthetic" (Williams 1976). Synaesthetic metaphors occur in many different languages (as in the well-known documentation of Indo-European examples in Sweetser 1990). Indeed, there appear to be universal or near-universal tendencies in the direction in which synaesthetic metaphors tend to occur, and there is general agreement that TOUCH is one of the more common source domains (Ullman 1957, Williams 1976, Yu 2003a, Petersen et al. 2008, Shen and Aisenman 2008). However, TOUCH synaesthetic metaphors map a highly limited range of elements, generally limited to scales of TEXTURE, LEVELNESS and TEMPERATURE, all of which we argue have an experiential basis – that is, a range of contexts in which the target and source concepts co-occur, as in the formation of primary metaphors (Grady 1997, Grady and Johnson 1998). We argue that the metaphoric expressions previously attributed to "PERCEPTION IS CONTACT" but more correctly termed synaesthetic demonstrate the limited range of scalar mappings identified elsewhere in synaesthetic metaphors, for instance in the psycholinguistic observations on synaesthetic metaphor of Petersen et al. (2008).

When scales of rough and smooth TEXTURES map to VISION, they map to scales of CONSISTENCY of tone or shade. A shade of red, or even an artificial light, may be *soft* or *harsh*, for example, mapping a TEXTURE onto the VISUAL QUALITY of the colour or light. Scales of LEVELNESS of a physical surface map onto the visual REGULARITY of a colour. An area of colour may be *smooth* or *uneven*, if it covers a surface regularly or irregularly.

These elements also map to other modalities, such as sound. A whisper may be *soft*, a scream *harsh*, whereas a sustained tone may be either *smooth* or *uneven*. Gaps in the mapping

exist – that is, tastes don't seem to generally be *uneven* in English, though they may be *smooth* – and some modalities receive more mappings than others. However, the fact that so much structure is shared between metaphors that map from TOUCH to different modalities does suggest that these are all subcases of a more general synaesthetic metaphor. In this, then, Lakoff (1993) was correct: in these cases, TOUCH can map to “PERCEPTION”, in the sense of mapping from TOUCH to other perceptual modalities.

Metaphors mapping TEXTURE and LEVELNESS to VISION, SOUND, and so forth are based on experiential overlap between the two domains, in the manner of primary metaphors. A smooth surface may have a more “even” colouration than a texturally rough surface, and a soft object may have a “softer” outline than a hard object. Running a stick over a smooth surface may produce a more “even” sound than a rough surface, and hitting a soft object will give off a “softer” sound than hitting a hard object.

In addition to these scales of TEXTURE and LEVELNESS, scales of hot and cold TEMPERATURES map across modalities. These tend to map to VISION and specifically to COLOUR, as in English *cool blue* or *hot pink*, or as in (1)-(2) from Chinese.

1) 蓝色的房间看起来很凉爽。¹

Lan se de fang jian kan qi lai hen liang shuang.

Blue room look very cool.

A blue room looks very cool.

2) 我的车是红色的，看起来很温暖。

Wo de che shi hong se de, kan qi lai hen wen nuan.

My car is red, look very warm.

My car is red and it looks very warm.

The Center of Chinese Linguistics PKU Database (PKU; ccl.pku.edu.cn:8080/ccl_corpus/) confirms the prevalence of these associations in Chinese, returning 44 instances of 冷色 “cold colour” and 71 of 暖色 “warm colour”, all having the senses in (1)-(2). Example (3) from this corpus is particularly explicit:

3) 在人们心目中，红、黄、橙三种颜色是“暖色”，蓝、绿色是“冷色”。

Zai renmen xinmu zhong, hong, huang, cheng san zhong yanse shi “nuan se”, lan lv se shi leng se

At people heart, red, yellow, orange three colour are “warm colour”, blue green are “cold colour”

In people's minds, red, yellow and orange are “warm colours” and blue and green are “cold colours”.

In English and Chinese, then, the “warm” colours are the reds and yellows of heat sources, such as the sun and fire, forming the basis of a scalar mapping from TEMPERATURE

¹ In Chinese examples in this paper, the first line is written in Chinese characters. The second line is the same sentence in *pinyin*, the official Chinese phonetic system used in the People's Republic of China. This is followed by a word-for-word English translation in the third line. The last line in the example provides an idiomatic English translation. The particle *de* indicates possession and follows adjectives.

to COLOUR. These metaphors, like those mapping from TEXTURE and LEVELNESS, are based on the real-world co-occurrence of sensory stimuli.

In each of the examples considered here, a scale is mapped from some aspect of TOUCH onto VISION or another modality. No other structure is mapped; for example, a warm fire or blanket can cause other objects or individuals to become warm, but a “warm” colour does not cause other objects or people to acquire “warmer” colours. Because only a scale is mapped, the distinction between “PERCEPTION IS RECEPTION” and “PERCEIVING IS TOUCHING” is not relevant in these examples. A phrase such as *warm red*, for instance, maps only the warm temperature itself, and does not map either the heat source “touching” one’s eyes or the eyes “touching” the heat source. This observation aligns with other findings about synaesthetic metaphor and the tendency to map scalar concepts, occasionally quality concepts (Petersen et al. 2008), and also helps explain the facility with which different sensory domains are combined in metaphor (Yu 2003a). That is, if basically the same scalar information is available for mapping from various sensory domains, it is logical that two source domains can be easily juxtaposed and mapped to the same target domain.

In terms of Lakoff’s PERCEPTION IS CONTACT, synaesthetic metaphors provide no evidence either for or against generalizing over “PERCEPTION IS RECEPTION” and “PERCEIVING IS TOUCHING” into PERCEPTION IS CONTACT, because the limited mappings in these examples do not make this contrast relevant. Neither do these examples give any indication that this generalization is necessary. An unnecessary generalization, we argue, is an overgeneralization not warranted by the data. Eradicating such an overgeneralization predictably brings other advantages. In this case, the advantages include enabling a stronger statement about the role of scales in synaesthetic metaphor, and the reclassification of the other supposed examples of “PERCEPTION IS CONTACT”. Let us now turn to these remaining examples and the evidence supporting their reanalysis.

3. THINKING IS MOVING

Unlike the synaesthetic metaphors, some metaphors mapping from TOUCH to VISION map a great deal of additional structure beyond simple scales of co-occurring qualities. For example, a complex set of mappings allow us to understand perception in terms of force dynamics and motion between locations. A visual percept can *attract* or *draw* your eye or vision, or suddenly *catch*, *capture*, or *trap* your eyes or gaze. Your eyes can *fall on* a stimulus, in which case you might be unable to *take* your eyes *off* it. We argue that these examples necessarily map to THINKING, rather than PERCEIVING; and that they might more accurately be captured as a special case of the metaphor THINKING IS MOVING.

Note, for example, that in English the eyes always “move” to the viewed object, rather than the reverse (Yu 2004). The distinction is not one of grammar, in that the PERCEIVER may be either the subject or the object:

- 4) Her eyes gravitated towards the scene.
- 5) The scene attracted her gaze.

However, in English, the PERCEIVED never “moves”, as in the following:

- 6) # The scene gravitated to her eye.
- 7) # Her gaze attracted the scene.

In Chinese, as we will see in the following section, the PERCEIVED can “move” to the eye. However, we will argue that this possibility involves a different metaphor, EMOTIONS ARE FORCES.

When a viewer’s eye “moves” to a location via THINKING IS MOVING, it “moves” so that the viewer’s attention and thoughts can be directed at that location. In contrast, PERCEPTION IS CONTACT makes no prediction about whether the PERCEIVER or the PERCEIVED will initiate the CONTACT. In fact, by combining PERCEPTION IS RECEPTION and PERCEIVING IS TOUCHING, PERCEPTION IS CONTACT explicitly includes the possibility of the PERCEIVER as the instigator (in the TOUCHING subcase) or the experiencer (in the RECEPTION subcase). PERCEPTION IS CONTACT fails to explain why the latter of these possibilities is never realized.

We can also see that the above examples involve THINKING rather than PERCEIVING in that no perception need, in fact, be involved in the metaphor. In all of the phrases discussed so far in this section, *gaze* or *eyes* may be replaced with *attention*. A thought may “attract” your attention; your attention can be “on” a mathematical problem; or your mind can “gravitate towards” a solution to a problem.

The same two possibilities exist in Chinese, in which a visual stimulus may “attract” the eye, or a conceptual stimulus may “attract” interest whether or not vision is involved. This is apparent in the following examples from the PKU Database. In (8), the stimulus (ribbons) is visual; in (9), the stimulus (a mathematical problem) is purely conceptual.

- 8) 彩带营造温馨浪漫的气氛，很吸引顾客的眼球。

Cai dai ying zao wen xin lang man de qi fen, hen xi yin gu ke de yan qiu.

Coloured ribbon build warm romantic atmosphere, very attract customer eye ball

Coloured ribbons build a warm and romantic atmosphere, so they easily catch the customer’s eye.

- 9) 这个数学难题曾经吸引了好几代优秀的数学家为之奋斗。

Zhe be shu xue nan ti ceng jing xi yin le hao ji dai you xiu de shu xue jia wei zhi fen dou.

This mathematic problem once attract several generation outstanding mathematician for it fight.

This mathematical problem once attracted several generations of outstanding mathematicians who fought to solve it.

Neither English nor Chinese appears to require that metaphors of this type must involve PERCEIVING. However, some metaphoric phrases involving THINKING IS MOVING do appear to require reference to vision. Rather than ascribe these to a different metaphor, we suggest that these are instances of visual attention that are not possible in other modalities or with non-visual attention. For example, *She ran her eyes over the painting* has no analogue ?*She ran her thoughts over the painting*. However, this may be due to our inability to concentrate on

different aspects of a painting without recourse to vision. Imagined or remembered visual experience appears to be acceptable: *She mentally ran her eyes over the painting* is much more acceptable than *?She ran her thoughts over the painting*. The same can be said for examples such as *Her eyes (mentally) roamed the room*, which is acceptable if she is visualizing the room in her memory, perhaps looking for a clue or detail. These examples, then, can also be attributed to THINKING IS MOVING. This explanation is preferable to PERCEPTION IS CONTACT in that it allows for generalization over examples of cognition that do, or do not, involve perception; as well as accurately predicting that the perceiver's eye or gaze will "move" to and "touch" objects, but that objects will never "move" to or "touch" the gaze.

4. THINKING IS OBJECT MANIPULATION

Just as THINKING IS MOVING can map from MOVING to visual THINKING, the metaphor THINKING IS OBJECT MANIPULATION can map from OBJECT MANIPULATION to visual THINKING. An additional set of metaphors that Lakoff (1993) considers to involve PERCEPTION IS CONTACT can instead be analysed with a subcase of THINKING IS OBJECT MANIPULATION that deals with visual thinking, much as the set described in the previous section could be felicitously re-attributed to THINKING IS MOVING. The OBJECT MANIPULATION is often explicitly indicated, as in the following:

- 10) Her eyes found the clue.
- 11) She undressed him with her eyes.
- 12) Her eyes picked out a detail in the pattern.

As with THINKING IS MOVING, these examples involve mental attention. However, some of the examples necessarily involve vision to greater and lesser degrees. Very often, we "find" answers, clues, and other IDEAS without necessarily using our eyes, as in *She found an idea in the book*. We can also direct our attention to the "manipulation" of ideas, as in *She mentally undressed him*, in which the subject may be imagining the revealed body with visual or non-visual (presumably tactile) thoughts. *Her eyes picked out a detail in the pattern* involves the mapping UNDERSTANDING IS GRASPING. In this case, the UNDERSTANDING is achieved through visual means. As with any UNDERSTANDING, though, the visual comprehension can be conceptualized as GRASPING.

Some examples involve "pursuit" of a visual stimulus, and as such require IDEAS ARE MOVING OBJECTS as well as THINKING IS MOVING. For example, *Her eyes followed him* or *She tracked his progress across the courtyard* are of this type. In English, the eyes "follow" a visual stimulus. In Chinese, however, they are more likely to "chase" a visual stimulus:

- 13) 最吸引人的是女主角，看电影时我的目光总是追随着她。

Zui xi yin ren de shi nǚ zhu jue, kan dianying shi wo de mu guang zong shi zhui sui zhe ta.

Most attractive *de* is female protagonist, see movie time I *de* eye sight always chase her

The female protagonist is the most attractive part. While watching the movie, my eyes were always chasing her.

Examples of this type are abundant in the PKU Database, as in (14)-(15).

14) 他的目光追随着姑娘的身影。

Ta de mu guang zhui sui zhe gu niang de shen ying.

He *de* eye sight chase girl *de* silhouette

His eyes are chasing that girl's silhouette.

15) 孩子们的目光追随麻雀飞翔。

Hai zi men de mu guang zhui sui ma que fei xiang.

Children *de* eye sight chase sparrow fly

The children's eyes are chasing the flying sparrows.

Uses such as (13)-(15) do not seem possible in English. For example, we found no examples of the subject *eyes* with the verb *chase* in the British National Corpus (<http://corpus2.byu.edu/bnc/>). Nonetheless, the English “follow” and Chinese “chase” examples involve the same metaphor. The difference between the languages is in the type of pursuit that is mapped, with the Chinese examples involving a more intent, rapid motion of the eyes in “pursuit” of the visual stimulus. In both languages, the vision and attention are conceptualized as following a stimulus.

In conclusion, visual attention is simply a subtype of attention. Metaphors such as the examples in the previous two sections do not map primarily to PERCEPTION, nor are they instances of PERCEPTION IS CONTACT. Attributing these examples to PERCEPTION IS CONTACT ignores the relation to other examples of THINKING IS MOVING and THINKING IS OBJECT MANIPULATION; the unavailability of mappings in which the PERCEIVED “moves”; and the optional nature of the element of PERCEPTION in most examples. Moreover, this incorrect attribution causes THINKING IS MOVING and THINKING IS OBJECT MANIPULATION to be confusable with the very different synaesthetic metaphors discussed earlier, as well as with EMOTIONS ARE FORCES, which the next section argues is the true metaphor underlying some of Lakoff's other examples of PERCEPTION IS CONTACT.

5. EMOTIONS ARE FORCES

How does the metaphoric structure of Lakoff's *the view knocked me over* differ from that of any other stimulus that “knocks one over”, such as *the realization knocked me over*? To us it seems irrelevant that *the view* is a visual stimulus. The reaction to the view, not the view itself, is mapped. That is, the EMOTION involved in the reaction is understood as a PHYSICAL FORCE via EMOTIONS ARE PHYSICAL FORCES. There is no need to posit a metaphor PERCEPTION IS RECEPTION or PERCEPTION IS CONTACT when PERCEPTION is only incidentally involved in some instances of the metaphor.

Many of the same types of evidence available for THINKING IS MOVING/OBJECT MANIPULATION also apply to EMOTIONS ARE PHYSICAL FORCES. For example, the element of PERCEPTION is optional in these examples. *The view blew me away* can be analysed in the

same way as *The idea blew me away*. One can be *struck by a sight* or *struck by an observation*, and so on.

Whereas THINKING IS MOVING/OBJECT MANIPULATION involves an active PERCEIVER (sections 3 and 4), EMOTIONS ARE PHYSICAL FORCES instead tends to involve a mobile PERCEIVED, and a PERCEIVER who does not “move” towards the PERCEIVED. In fact, in English, the cause of the emotion always “moves towards” the experiencer. Metaphorically, the PHYSICAL FORCE affects the experiencer. Sentences may be active or passive, but the experiencer is always “moved” and never instigates the “movement”:

16) The view blew me away/knocks me over/moved me/touched me.

17) He was struck by the sight.

Sentences such as “I touched the view” or “I struck the sight” are impossible.

In Chinese, however, the eyes do sometimes “reach out and touch” something, thereby bringing about the emotional effect that is conceptualized as a physical force. In the following metaphoric idiom, people see (“touch”) an object and feel emotions as a result. Example (19) is from the PKU Database.

18) 年轻时的照片让人触物兴怀。

Nian qing shi de zhao pian rang ren chu wu xing huai.

Young time *de* photo make people touch object rise emotion

All sorts of feelings can arise when people see photos of their youth.

19) 这张照片使我触景生情，浮想联翩。

Zhe zhang zhao pian shi wo chu jing sheng qing, fu xiang lian pian

This photo make me touch scene rise emotion, thoughts throng

Looking at this photo, I could not help becoming emotional and various thoughts thronged my mind.

In English, one can say *The photo touched me emotionally*, but not *I touched the photo emotionally*. In Chinese, however, one can voluntarily “reach out” and experience emotion as a result. In the above example, the emotional force comes from a physical object. However, this force may be produced by another stimulus, such as a nostalgia-inducing location. Example (21) is from the PKU Database.

20) 这里是她跟前夫住过的地方，来到这儿难免触景生情。

Zhe li shi ta gen qian fu zhu guo de di fang, lai dao zhe er nan mian chu jing sheng qing.

Here is she with front husband live pass *de* place, come arrive here difficult avoid touch scene rise emotion

This is the place she and her ex-husband used to live. Being here she could not help becoming emotional.

21) 来到父亲生活过的地方，兄妹三人睹物思人，触景生情。

Lai dao fu qin sheng huo guo de di fang, xiong mei san ren du wu si ren, chu jing sheng qing.

Come father lived *de* place, three siblings see thing miss person, touch scene rise emotion

The three siblings came to the place where their father once lived. This place reminded them of their father and they became emotional.

It should be noted that these examples are idioms. It is not always possible to “touch” a stimulus and cause oneself to feel an emotion. Nevertheless, it seems meaningful that these idiomatic examples that allow a viewer to “touch” a stimulus involve an emotional effect on the viewer. Within EMOTIONS ARE PHYSICAL FORCES, the self-causation of emotion logically maps to subjecting oneself to a physical force. It is also logical that this PHYSICAL FORCE would be minor – that is, a touch rather than a strike or a blow – since humans are more likely to seek out mild nostalgia rather than a more violent emotion. In English, this mapping is not instantiated in language, and in Chinese, it seems to be peripheral. Nevertheless, its occurrence in Chinese idioms fits the predicted structure based on EMOTIONS ARE PHYSICAL FORCES. There is no explanation in PERCEPTION IS TOUCHING for the involvement of the emotions in these Chinese idioms, and yet this emotional involvement is an expected and necessary part of EMOTIONS ARE PHYSICAL FORCES. This further emphasizes the need to recategorize English examples such as (16)-(17) as involving EMOTIONS ARE PHYSICAL FORCES rather than lumping them under PERCEPTION IS CONTACT.

6. HARM IS PHYSICAL INJURY

Finally, we argue that HARM IS PHYSICAL INJURY, a metaphor related to EMOTIONS ARE PHYSICAL FORCES, accounts for the remaining examples of the supposed PERCEPTION IS CONTACT. Metaphors frequently map physical HARM onto unpleasant experiences in other modalities, such as VISION. For example, a light can be *sharp* or *piercing* in the manner of a sharp object, metaphorically *cutting into*, *assailing* or *assaulting* one’s vision. Similar mappings extend to other sensory domains. For example, audio stimuli can be *piercing* or *sharp*, and a sound can *assail* or *assault* your ears much as a visual one can *assail* or *assault* your eyes. In these cases, not only is the scale of HARM mapped to VISION or SOUND, but the stimulus of the pain is mapped. Additionally, the healing of pain maps to aiding recovery from an unpleasant stimulus, as in sights that are *soothing to the eye* or in the idiom *sight for sore eyes*, meaning a pleasant visual stimulus that helps heal the effects of negative stimuli.

All of these mappings are also present in Chinese, as indicated by the following examples from the PKU Database. For instance, a bright red can “prick” the eye:

22) 她决赛那天，往日熟悉的红色塑胶跑道变得格外刺眼。

Ta jue sai na tian, wang ri shu xi de hong se su jiao pao dao bian de ge wai ci yan.
She final that day, days before familiar *de* red colour synthetic athletics track
become exceptionally prick eye.

On the day of her finals, the formerly familiar red synthetic athletics track became exceptionally eye-pricking to her.

Here, a sharp object maps to the visual stimulus, bright red. The physical act of pricking maps to the perceptual effect of the red; the pricked skin maps to the affected eyes; and the painful stimulus maps to the unpleasant visual sensation. An audio stimulus may be represented with the same mappings:

23) 用小刀刮玻璃的声音真刺耳,让人不舒服。

Yong xiao dao gua bo li de sheng yin zhen ci er, rang ren bu shu fu

Use knife scrape glass de sound really prick ear, make person not comfortable.

The sound of a knife scraping glass is really ear-pricking, causing discomfort.

In this case, the sharp object maps to an audio stimulus, and the affected skin maps to the ears. The metaphor is fundamentally the same for VISION and SOUND, and is fundamentally the same between English and Chinese.

In both languages, the perceptual stimulus does the “touching”. That is, a bright light can “pierce” your eyes but your eyes cannot “pierce” or “impale” themselves on a bright light. The relevant metaphor mapping HARM is, in Lakoff’s terms, only PERCEPTION IS RECEPTION, never PERCEIVING IS TOUCHING. This is not too surprising given our world knowledge of HARM. We rarely inflict pain on ourselves by reaching out to painful stimuli. The “gap” in mappings, then, can be attributed to the lack of source domain structure available to map to other modalities. Mappings from HARM provide no conclusive evidence against PERCEPTION IS CONTACT.

On the other hand, abandoning PERCEPTION IS CONTACT has the advantage of allowing us to group the above examples with the more general metaphor HARM IS PHYSICAL INJURY. If a bright light *hurts my eyes*, it is probably damaging in its painful effect on the retina. However, if a shade of pink *hurts my eyes*, the offence may be more emotional than physical. Assigning examples such as these to a subcase of HARM IS PHYSICAL INJURY admits this possibility. Some UNPLEASANT PERCEPTS may be more psychological, and thus relate more to the general metaphor HARM IS PHYSICAL INJURY; whereas others may be more specific to a given modality, and relate more to the subcase. If UNPLEASANT PERCEPTS ARE PHYSICAL INJURIES is a type of HARM IS PHYSICAL INJURY, then it is unproblematic that some metaphors would be more specific and some more general. All are cases of HARM IS PHYSICAL INJURY and need not be assigned to PERCEPTION IS CONTACT.

CONCLUSION

Overall, we argue that PERCEPTION IS CONTACT is unnecessary. Classifying the examples discussed here as PERCEPTION IS CONTACT both instigates a damaging overgeneralization and misses a number of more useful generalizations. We argue that the true synaesthetic examples attributed to PERCEPTION IS CONTACT should be instead considered alongside other synaesthetic examples, with which they share attributes such as mapped scales of sensory qualities. Most of Lakoff’s examples of the PERCEIVING IS TOUCHING subcase of PERCEPTION

IS CONTACT can instead be attributed to THINKING IS MOVING/OBJECT MANIPULATION, and most of his examples of the PERCEPTION IS RECEPTION subcase can be attributed to EMOTIONS ARE PHYSICAL FORCES. This is because the former involves an active perceiver who is also a THINKER, and the latter involves a perceiver who feels EMOTIONS. Chinese illustrates an exception to the latter case, in which someone may subject themselves to a nostalgic experience. However, even this possibility fits perfectly within the realm of potential mappings of EMOTIONS ARE PHYSICAL FORCES. Reclassifying these examples, then, abolishes the broad generalization PERCEPTION IS CONTACT but paves the way for several other more explanatory generalizations. This suggests that PERCEPTION IS CONTACT is less descriptive, useful and accurate than the more modest generalizations proposed here.

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MODELS AND APPROACHES FOR CHARACTERIZING APHASIA: PSYCHOLOGICAL AND EPISTEMOLOGICAL PERSPECTIVES

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ABSTRACT

Aphasia is a neurogenic condition while language is not. In the aphasia field, the direction of reasoning should go from brain injury to verbal impairment; the logical implication is one-way. When the logical implication is inverted, the conclusion is false. This principle allows predicting wrong inferences when the reasoning goes in the reverse order. Maybe that was the cause of the impasse suffered on the matter for more than a century and a half. When prospective approaches are not possible, and trying to attenuate the deficits of retrospective ones, then all the patients should undergo the same psychological evaluations. Post-mortem aphasia studies are always retrospective. Curiously, they are still taken as 'definite'. Aphasia patterns have to be discovered independently of their biological basis in order to avoid circularity; besides, any combination of the latent language impairments has to be recognized. New models concerning the relationship between brain and language have emerged. Beyond the novelty of the instrument used for data collection, deep methodological considerations are necessary not only for discovering the dissociations and interactions among neuropsychological functions, but also for studying the consistency among the different approaches, samples and instruments employed. Nowadays, such consistency has been magnified by dissemination. The impetus to reach consensus with psychological events has led to the shocking situation in which an article published in 1984, for example, has been quoted almost 22,000 times by April of 2015 as synonymous with the procedure for demonstrating diagnosis. Considering the guidelines of 2011 for primary progressive aphasia (PPA) that number was almost 800 in just four years. If the conceptual and the

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operational definitions are confused, the theory gets into an endless loop. Additionally, the use of typical cases seriously restricts progress. Despite significant improvements observed in the psychological methods during the last years, the psychological outcomes are still puzzling. The ‘comprehension-expression’ organization and the ‘semantics-syntax’ one involve two different systems of classification which are not mutually excluding. Unlike the dissociation between comprehension and expression, the dissociation between semantics and syntax is not easy to observe, even using complex linguistic evaluations. Syntax involves relationships among semantic units but, simultaneously, produces a higher-order semantic unit. Researchers evaluate those levels of ‘semantic’ units to differentiate semantics vs. syntax. The methodology is unclear because changing parts involves changing the whole.

Neuropsychology has two parts. If the validity of the psychological outcomes is doubtful, any language neurobiological model will be doubtful.

INITIAL COMMENTS

This is an essay which deals, principally, with some psychological and epistemological issues in the aphasia topic. The article has more questions than answers, which is good news. When there are many questions, there is material to work. In contrast, when something is perfect and ‘definite’ there is nothing to do. Science is perfectible; it needs problems to evolve.

Today, there is so much neurobiological data to process that the core of reasoning tends to be weak. Instead, literature reviews and summaries of hundreds of articles abound. Data from the new technologies along with the demands of overproduction from the current scientific system overwhelm researchers with a lot of information, which is difficult to crystallize in theories. Considering neuropsychological studies in particular, it could be said that, at the moment, there is just one dominant theory for the neurobiological basis of language. The globalization and the international work networks favor consensus and a tendency to fall into absolutisms as a way to compensate, perhaps, for such level of data production. It is as if all the neuropsychological researchers belong to the same laboratory thus leading to share the same theory. Simultaneously, there is a proliferation of concepts, terms, and proposals emerging from other disciplines and interdisciplines (such as the linguistics and its branches, or the neuropsychiatry and its syndrome-specialties) which complicates the panorama.

Concerning some of these concepts and terms, in this work the phonetic-phonological and the pragmatic aspects of communication will not be treated unless otherwise indicated. Although some authors integrate the fields of semantics and pragmatics they will be separated here as much as possible. The concepts of ‘context’ or ‘intentions’ may be used to partially replace the broad scope of pragmatics. Besides, only the most formal aspects of natural verbal languages will be discussed and any linguistic unit, such as a word or a sentence, will be considered a ‘semantic’ unit. Accordingly, a sentence will be defined here as a linguistic (not a grammatical) unit consisting of one¹ or more words that are syntactically ‘and’ semantically linked to produce a complete thought, i.e., if those words are perfectly organized in their syntactic functions (as determiners, nouns, verbs, etc. throughout the sentence) but they do

¹ Sometimes one single word, which apparently lacks of the conventional structure of a sentence, can transmit the meaning of a whole sentence. In the same way, one single sound can transmit the meaning of a whole word.

not produce sentence meaning, then those (empty/ meaningless) words will not form a sentence unit; simultaneously, if the syntactic constructions do not contribute to produce sentence meaning, then those (disorganized) constructions will not form a sentence unit. This was done this way by mainly considering the use (and/ or interpretation) of sentences in experimental settings.

Trying to simplify the presentation and/ or avoid the use of many linguistic terms, to the extent that this is possible, some terms will be fused: The lexical and semantic characteristics will be indistinctly seen as part of the same process, being the lexical aspects included in the semantic ones. The same will be done with the morphological and syntactic characteristics, which will be seen as part of the morphosyntactic process. The present essay attempts to reduce data and names in favor of expressions which involve reasoning, methodology, and inquiring.

This is not a detailed exposition of the models, theories, and approaches that exist for aphasia (and/ or language), but rather a discussion about their underlying method/ epistemology as a whole. The basis for using the terms of semantics and syntax are basically treated with the attempt of stimulating the discussion. A particular viewpoint is all the time present. As well, the value of psychometry in the scope is reconsidered.

INTRODUCTION

The loss (complete or partial) of verbal language as a result of some brain condition with preservation of the primary inputs (like auditory, visual or somatosensory projections) and outputs (like motor projections) can be defined as aphasia.

Sinanović et al., [1] propose a definition which points out the predominantly mixed nature of the condition in its clinical manifestations:

‘Aphasia is a loss or impairment of verbal communication, which occurs as a consequence of brain dysfunction. It manifests as impairment of almost all verbal abilities, e.g., abnormal verbal expression, difficulties in understanding spoken or written language, repetition, naming, reading and writing.’ pp 79.

Regarding primary progressive aphasia (PPA), Mesulam, et al., [2] state:

‘The diagnosis of primary progressive aphasia (PPA) requires the fulfillment of three core criteria. First, the patient should have an aphasic disorder of recent onset as manifested by distortions of word usage or comprehension that cannot be attributed to more elementary motor or perceptual deficits. Second, this language impairment should constitute the most salient neurobehavioural deficit and the chief impediment to the pursuit of customary daily living activities during the initial stages of the illness. Third, the underlying disease should be neurodegenerative and, therefore, progressive.’ pp 1538

In general, and according to the definitions provided as examples, aphasia is understood as a condition secondary to brain impairment. Naturally, this concept does not extend to the communication system defined as ‘language’ which, at any rate, is related to brain enhancement and whose socio-educational genesis is beyond dispute.

Although both aphasia and language are neuropsychological processes, aphasia is a neurogenic (pathological) condition while language is not.

Epistemologically speaking, in the field of aphasia the direction of reasoning should always go from brain injury to verbal impairment since the logical implication is one-way. It is well-known that, when the logical implication is inverted, the conclusion is false. This principle allows predicting wrong inferences when the reasoning goes in the reverse order. Maybe this was the cause of the impasse suffered on the matter for more than a century and a half.

Away from logic, the feasibility with which medical studies can be performed cannot be neglected. When aphasia prospective approaches are not possible, and trying to attenuate the deficits of retrospective ones, then all the patients should undergo the same psychological evaluations.² Post-mortem aphasia studies are always retrospective. Curiously, they are still taken as 'definite' [3], even if the term 'definite' is incompatible with Science [4].

The (prospective) studies of Tyler and other authors, which are shown next, were selected for their careful experimental designs. This situation allows seeing the variables more clearly and beginning the analysis more comfortably.

Tyler et al., [5] carried out a functional neuroimaging study in which patients with left hemisphere damage or healthy participants listened to spoken sentences that either contained a syntactically ambiguous or matched unambiguous phrase. According to sample selection criteria ('Mini-Mental State Examination' or 'Raven's Colored Progressive Matrices')³ none of the patients were cognitively impaired. Regarding the experimental spoken sentences, those authors stated: 'Even though the ambiguous phrases were presented in a neutral context, subjects have preferences for one syntactic interpretation over another, which affect the ease with which ambiguities can be resolved (Rayner and Duffy, 1986)'. This preference situation, which Rayner and Duffy [6] define as lexical ambiguity, was then controlled by the authors through the incorporation, in the experimental design, of the dominant/preferred and subordinate/non-preferred conditions as independent variables. Interestingly, that was the situation which produced brain-functioning differences between patients with left hemisphere damage and healthy participants in the ambiguous phrases. Beyond neurobiological findings, patients were insensitive to those preferences, and that situation was taken (based on other control tasks) as an index of syntactic rather than semantic deficits. This is an example where researchers evaluate two levels of semantic units (the preferred and non-preferred sentences based on the content of a previous clause) to intentionally differentiate syntax from semantics, i.e., rooted in two semantic categories, researchers get to different 'syntactic' categories thus not only assuming that syntax is, in this experimental context, different from semantics but also concluding that it was syntax (and not semantics) which caused the observed deficits. The form of the verb (either 'is' or 'are') was the cue which these authors used to convert an initially semantic context in a syntactic one. The patients recruited in such work showed almost no semantic impairments compared with syntactic ones (0-6% vs. 0-47%, respectively) in a sentence-picture matching test. This result was also used for interpretations.

² It has to be clear that undergoing the same psychological evaluations is different from achieving (or intentionally searching) the same result patterns for all the patients.

³ Raven Matrices and Mini-Mental are not equivalent tests of cognitive performance; besides since the Mini-Mental is a predominantly verbal test, it is sensitive to left hemisphere lesions [9]. It would be interesting to see the correlation between the tests selected to include patients (as dependent variables) and the results of the experiment.

Tyler and Marslen-Wilson [7] had previously observed that syntactic decisions are affected by prior semantic context, and that syntactic processing is not autonomous from semantics; i.e., the syntactic structure of a sentence is computed with reference to its meaning. Marslen-Wilson and Tyler [8] had also observed that ‘lexical, structural (syntactic), and interpretative knowledge sources communicate and interact during processing in an optimally efficient and accurate manner.’

SOME EPISTEMOLOGICAL COMMENTARIES ABOUT SEMANTICS AND SYNTAX: FROM PSYCHOLOGICAL INTERACTION TO NEUROBIOLOGICAL DISSOCIATION

Independently of the works quoted above, it is well-known that when the interaction between two or more factors has been verified, it cannot be concluded that only one of those factors is causing the studied effects. As well, when two or more attributes (factors/ variables) with their corresponding categories and/or levels of assessment are confused, it cannot be inferred that any of those attributes explains the phenomenon under study.

For example, and going well away from the language subject, if chocolate cake mixtures are put into small molds and vanilla cake mixtures are put into large molds, then it cannot be inferred that either the small molds or the chocolate mixtures produce, let’s say, the most attractive cakes. That is so because the effect of chocolate cake mixtures combined with large molds, and the effect of vanilla cake mixtures combined with small molds are missing.⁴ Although the cake needs from both attributes (mixtures and molds) to be produced, the process involved between the initial attributes and their final fusion is not trivial, represents the method, and is also irreversible. In this case, the attributes of cake mixtures and molds are essentially different in their quality, and the two attributes want to be related. So, and in order to be sure of the causes and effects of such relationship, the levels or categories for the mixtures, and the levels or categories for the molds have to be clearly distinguished and combined.⁵ If qualities and levels are confused (without clearly identifying the types of variables and their categories) as in the example of the cakes, it will be impossible to know what it is measured and interpreted.

Going back to the language topic, the fact that a ‘perfect’ sentence activates certain brain areas, whereas an ‘imperfect’ (or more difficult to perceive) sentence activates other brain areas, does not necessarily validate, let’s say, the semantics-syntax neuropsychological model

⁴ Other examples of levels or categories for the mixtures can be: ‘without sugar’, ‘with a little of sugar’, and ‘with a lot of sugar’; whereas, for the molds, they can be: ‘square’, ‘triangle’, and ‘circle’. Maybe one variable only has qualities while the other variable only has levels to be assessed. The problem is not the type of the selected variables (qualitative or quantitative) but the confusion among the categories or levels of their measures. Such confusion tends to obscure the variables’ effects.

⁵ Apart from the researchers, who represent the designers of the method, there are the interviewees who represent the receivers of the final product. If the qualities and levels of the initial attributes and their assessments are not clearly distinguished, the researcher’s viewpoint may be confused with the interviewee’s viewpoint. The problem is that the final product resulting from the interaction between molds and mixtures also has attributes or variables, such as the different shapes and flavors of the cakes. But such assessments have to be differentiated from the assessments of the initial materials, such as the shapes and flavors of the molds and mixtures. On the other hand, it is possible that researchers (or their techniques) are seeing how the interviewees are cutting the cake rather than seeing how the interviewees are appreciating or savoring the cake.

(see below the hegemonic neuropsychological model) because it is not clear if the qualities and levels of the two supposedly assessed attributes have been well distinguished.⁶ Using one polysemantic word in different linguistic contexts is not simple to experimentally distinguish and match, particularly for semantics and syntax, which are two interacting and highly complex psychological functions. Researchers are changing two categories at a time (one part and the whole), for two intricate attributes which, still, may differ in their quality. Even supposing that exactly one single detail was changed for otherwise identical sentences, maybe the studied brain is distinguishing something different from what is interpreted by researchers. For example, maybe the brain is distinguishing different types of ‘semantic structures’ (such as the meaning of the sentence as a whole versus the meanings of single words or fragmented sentential subunits) instead of different types of ‘syntactic structures’. Beyond semantics and syntax, maybe the brain is distinguishing the linguistic structure which is more attractive, consolidated, usual, easy to decipher, and/ or singular than the other.

Syntax involves relationships among semantic units but, simultaneously, produces a higher-order semantic unit. Interestingly, some researchers evaluate those levels of ‘semantic’ units (e.g., words or sentences) to differentiate semantics vs. syntax, being the sentence level reserved for syntax.

When the method is not clear, results can be freely interpreted with the theory at hand. The problem in this scope in particular is that there are many linguistic theories (for reviews see, [10-15]) but very few neurobiological ones [16-18] to interpret neuropsychological issues.

Nowadays, and psychologically speaking, researchers tend to put in the center of experimental analyses to semantic and syntactic processes, with a clear preference towards studying these processes with comprehensive tasks [16-17].⁷ Neurobiologically speaking, and certainly influenced by the theory of the dorsal and ventral streams for language [19] (including its inspirational theory for visual perception [20, see also 21]) the anatomical dorsal and ventral pathways have now become the main neurobiological explanation for semantics and syntax. Curiously, the original work for the dual stream [19] was predominantly based on speech perception and speech production rather than on semantics and syntax. Beyond the current inclusion of pragmatics as a neurobiological subject of interest, and the discovering of new brain centers and pathways for language processing [16-18], the fact is that semantics and syntax are considered essential (and comparable) linguistic categories under this view: Today, the hegemonic neuropsychological model for language is represented by this view.

At this point, some questions can be asked: Has morphosyntax a different quality than semantics? If this is not true (and they have the same quality): Does morphosyntax involve a different level of analysis (either inferior or superior) than semantics? If this is true, and assuming that researchers have to be located in the superior level to analyze the inferior one:

⁶ Although verbal neuropsychological events are so much complex than cakes and molds, the following equivalence can be posed: The contrast between some correct verbal meaning (e.g., the meaning of a word) put into a perfect sentence versus some ambiguous verbal meaning put into an imperfect sentence would be similar to the contrast between chocolate cake mixtures put into small molds versus vanilla cake mixtures put into large molds. The same would apply to some correct/ ordered morphosyntactic construction versus some ambiguous/ disordered morphosyntactic one. The methodology is unclear because, in this case, changing some parts involves changing the whole.

⁷ There is also a preference towards studying the syntactic process, which seems to be clearer than semantics for measuring and interpreting (see below).

Is morphosyntax an inferior level of analysis within semantics? Or is semantics an inferior level of analysis within morphosyntax?

If semantics and syntax differ in their quality, they cannot be compared in the same way that ‘cake mixtures’ and ‘molds’ cannot be compared. They cannot be directly assessed as subsets belonging to the same category and/or be measured by the same yardstick. If some relationship between semantics and syntax wants to be established with reference to another variable, they will need more complex analyses, than those of the cake example, to avoid psychological confusion between qualities and levels.

Maybe semantics (in its broadest sense) is not a level in the hierarchy of verbal language, as are commonly considered the phonetic-phonological and the morphosyntactic ones. Perhaps it is more an attribute which breaks through the levels of other verbal attributes, thus acting all the time as a parallel (or surrounding) process rather than as a sequential one.

Syntax involves the rules for articulation/ linking, which are easy to teach and learn, but the rules for understanding are more difficult to find and transmit. (Perhaps this is due to the fact that syntactic rules are more stable and restricted, while semantic rules are more chaotic and versatile).

Usually, semantics and syntax are seen as complementary processes where semantics would be the content/ the *gnosia*/ the ‘what’ while syntax/ morphosyntax would be the form/ the *praxia*/ the ‘how’ (or where). However, and without forgetting that verbal language is a biosocial instrument developed by human beings to better control and organize communication, the following analogy can be proposed: By considering semantics as the content of ‘water’ and morphosyntax as the human tools or ‘containers’ which gives form to such content, water will not stop being water by taking the shape of the containers that human beings invented to contain, control, organize, and understand it. On the contrary, if the containers disappear when human beings have already become accustomed to the containers, the water will slip through their fingers and an important part of human beings will be lost, i.e., as human beings can no longer manipulate water, they will enter into crisis.⁸ The analogy is used to show not only the importance of tools for humans, but also (and for didactic issues) the relative importance that contents and containers may have in certain contexts.

Considering morphosyntax just as a tool, semantics would not only represent the content ‘poured into/ passed through’ the morphosyntactic structure but also ‘the root and the goal’ of the process mediated by syntactic sequencing. Surrounded by this wide-ranging structure or matrix, morphosyntax would be an inferior level of analysis within semantics. As it will be seen below, this perspective is apparently difficult to conceive or understand by the hegemonic neuropsychological model for language. Such misunderstanding may lead to interpret results in the most convenient way or, most probably, in the easiest way to be carried out or decoded. Such way is usually the linear and analytic one. The problem is that interpretations generate theories.

The attempt of analyzing the complex interactions between semantics and syntax by taking into account just one epistemological point of view (e.g., the linear or the nonlinear

⁸ Usually, when human beings become accustomed to a new tool, it is difficult to go back to an old one. This can lead to confound the adjectives of ‘new’, ‘later’, or even ‘human’, with ‘better’ or ‘superior’. Taking into account the specific context in which scientists have to work, the experimental method is also a human (logical) tool, necessary in scientific settings, but it cannot be compared with the old, wild, and wise intuition, which human beings are progressively losing. Maybe syntax is closer to the experimental method (thus favoring syntax study) while semantics is closer to intuition.

one) may lead to a reductionism which can detract the whole process of verbal processing in any direction. Returning to the example of the contents and containers, the attempt of reducing the complexity of semantics to simplistic (linear and partial) syntactic analyses would be equivalent to try to understand the essence of a cake by seeing the details of the mold. The analysis in the opposite direction can be proposed as follows: the attempt of expanding/ observing the particularities of syntactic analysis through a more comprehensive semantic view would be equivalent to try to understand the details of the molds by seeing all the ingredients of the cake mixtures. Although both expressions are strange, the second is not so unrealistic in the sense that a mold has turned out a useful instrument, created to improve the presentation of the cake, but not vice versa.

Catani and Bambini [16] propose a theoretical model for analyzing social communication and language in which five levels are hierarchically and serially organized according to developmental and evolutionary aspects. When describing the level 3, which is the 'anterior temporal networks for lexical and semantic processing', the authors state: '...the temporal cortex is involved in selecting verbal labels for objects in a posterior–anterior progression of word comprehension, from generic to specific levels of precision.' When describing the level 4, which is the 'fronto-temporal network for syntactic analysis', for some reason the authors intentionally use the term 'analysis'. Although they say that the Wernicke's region participates in syntactic analysis, they do not specify a certain direction for either the progression or the level of precision as they did for the level 3. They affirm: 'successful syntactic processing requires the interplay between lexical properties and syntactic analysis, which is mediated by the joint activation of the whole frontotemporal system connected through the long segment of the arcuate fasciculus.'

It is not clear whether the term 'syntactic analysis' was used by Catani and Bambini [16] as synonymous with 'syntactic processing' or if it was used as a singular way of conceiving (or studying) the particularities of syntactic processing. Besides, at first sight, both processes seem to be analytic. If that is so, not only the semantic processing would go from something more generic to something more specific but also the syntactic processing.

To understand the model of Catani and Bambini [16] some alternative appreciations can be formulated concerning semantics and syntax. While continuing the discussion of the differences and interactions between those two functions, conciliations among terms or concepts will be searched.

Compared with syntax, maybe semantics is a more complex process that surely exceeds verbal language and human scope, as well as partial and linear analyses; it is probably more related to the principles of holistic perception or even to the gestalt theory, and it cannot be understood outside its context or background, at all ages. In the attempt to find a schematic representation for this process, semantics could imaginatively be seen as a network of meaningful contents or symbols, which mostly are intersecting with each other; some may be closer to others, some may be stronger than others, and some may be isolated from others. The patterns of their relationships would be dynamically determined, among other reasons, according to the standards, points of view, needs, and the significance for survival of the people involved in communication. Those patterns not only would be transversally affected by human interaction, at the very moment of communication, but also longitudinally, throughout each step of the development. Considering that verbal labels are human conventions established for certain meanings, the association between the original network of nonverbal contents and the verbal construction of linked labels is probably the main

characteristic of semantic integration. Therefore, the convergences and divergences between phonological and morphosyntactic features will also affect the patterns of semantic relationships.

If all the possible linked labels are visualized as a nonlinear surface, and a sentence as a curve line, a dynamic interaction can be conceived where the movements around a certain meaning, or the constructions around a certain sentence, will have more or less significance. Accordingly, the movements and constructions will act at different moments (initially, subsequently, or simultaneously) depending on the context. Movements, constructions, and moments are linguistic associations acting in a certain context. But if only one association is considered the most significant, and the other associations are considered just pieces of the first association, there will be an oversimplification of the whole process. For current neurobiological theories, syntax seems to excel semantics as a superior level: as a more abstract representation, higher-order function, and later-in-time stage. However, it is highly probable that both linguistic functions require complementary forces interacting with each other, as part of the same process. Considering the history of linguistic knowledge, it is difficult to explain why the isolated line of a sentence (just a handful of linked labels) became more important than its surrounding matrix. Maybe that was so because the final expression of verbal language follows a linear arrangement, which is a necessary (but not sufficient) characteristic in this type of communication.

Bearing in mind the need of interaction between semantics and syntax, it can be observed that sometimes 'pure' thoughts go faster than words, thus producing incorrect utterances. However, when the semantic associations are harmonious with the morphosyntactic ones, utterances will go out correctly aligned. In order to convert 'pure' thoughts in 'verbal' thoughts and, then, in explicit utterances, everything that takes place simultaneously and involving many areas and functions of the brain (such as attention, perception, gnosis, praxis, memory, associations of any type, social-emotional adjustment, global cognition, and so on) at some point has to follow the linear mode of verbal language.⁹ Some of the associations that the brain can do to semantically organize an utterance can be deduced from the nature of the errors committed during spontaneous speech: The presence of paraphasias of any type, the inopportune influence of emotional sources, as well as the previous and subsequent thoughts, which can be jumbled up with the current expression, are frequent examples of these associations.¹⁰

When the syntactic analysis of a sentence is defined as a sort of a formal reasoning, maybe such reasoning is conceived like a sequence of (empty) compartments useful to organize the world of word labels, which would follow a similar organization to the world of nonverbal representations.

Verbal ability requires that all that internal universe of feelings and ideas finally goes out aligned and synthesized for that narrow channel of morphosyntactic 'molds'. In that channel, every part of every linguistic unit has to be assembled with the next in order to be converted

⁹ When thoughts go out correctly aligned through the final verbal and linear mode, it is not difficult to imagine the similarity with different containers passing through an assembly line, in which the different contents are correctly placed in their specific containers.

¹⁰ Probably this kind of errors affects communication more seriously than the 'purely syntactic ones' (see below). To what extent such more serious semantic errors are produced because the syntactic compartments have been seriously broken is an open question.

in a meaningful and well-organized expression.¹¹ Maybe for this reason expression (speech production) is sometimes confused with syntax. However, comprehension (speech perception) also requires that the received message pass through that narrow channel: All the received contents must be correctly placed in their specific morphosyntactic ‘molds’ so that the receptor’s brain could deal with a well-organized/ decodable verbal unit; i.e., all the words and/ or sounds of the message have to be ordered in such a linear mode because, otherwise, the message will not be perceived as a verbal one. Afterwards, the verbal message would semantically spread to the whole brain thus reaching the different networks of memory and cognition for a whole and multimodal interpretation.

Semantics would be dynamically guided by an advanced organization established during the phylogeny and ontogeny that resembles the process of perception: A top-down perspective which goes from generic to specific levels of precision (see Catani and Bambini, [16]) would be dominant. Under this organization, it is necessary to first recognize the general meaning (the whole background) to then analyze/ select a specific meaning or detail.

Taking into account some of the variables usually studied in the laboratory, the linguistic preferences [5], levels of difficulty, and frequencies of use, which by the way are all interconnected, are probably more related to semantics than to syntax.

Within the cultural factors associated to both linguistic processes, morphosyntactic knowledge would be more compulsorily taught, and more sociologically and logically organized, while semantic knowledge would be more intuitively perceived and more automatically and biologically organized, to a certain extent. Usually, it is easier to show or share semantics than to explain it. Maybe for this reason it is more difficult for neurobiological researchers to operationalize and analyze semantics components than syntactic ones. Probably, the more human is an attribute, the easier is to analyze it. Reciprocally (and paradoxically for humans), the more primitive is an attribute, the easier is to integrate and perceive it. The semantic ability involved in extracting the figure (the most relevant meaning) from a background of competing linguistic stimuli, according to internal and external demands, is dynamically and progressively constructed along with the rest of the cognitive abilities. With time, and living in a coherent world, human beings will learn to prefer the meaningful stimuli and reject the meaningless ones according to: their frequency and quality of appearance, consistency to reward, usefulness to find biological or social solutions, pertinence for a certain situation, etc. Verbal stimuli are not the exception.

To have an idea of the complexity of semantic processing even using single-word tasks, or just two prepositions, see Wright, et al., [22] as well as Marslen-Wilson and Tyler [8] for an experimental approach which uses picture naming and word–picture matching; see also Kelleher and van Genabith [23], for a computational model which uses two prepositions and shows nonlinear images.

When sentence semantic processing wants to be assessed in functional neuroimaging studies, a common way that researchers use to produce a modification which affects the meaning of a sentence (without changing syntax) is to change a single word in the sentence. This procedure is enough to reach the desired effect with clear experimental conditions: Changing several words, using implausible sentences or series of unconnected words, involve more variables and complicate interpretations. But changing just one single word (with high

¹¹ ‘There is a lack of consensus on the nature of the process of linking; that is, how the conceptual form of thoughts determines the form of the spoken expressions used to describe them’ [15].

linguistic weight) may be semantically equivalent to change the entire sentence. Considering an example of Newman, et al., [24] (also quoted by Hagoort and Indefrey, [17] and by Murphy [15]): ‘my mother ironed a kiss’; the misuse (unusual presentation) of a single word changes the meaning of the whole sentence. Since the highest semantic level of the sentence unit is dominant, all the lower-level semantic units will cooperate to form the biggest conceptual representation (or the most relevant perception), no matter if the generated image/meaning is usual or unusual. So, it is highly probable that, for the receptor's brain, ‘the meaning of each linguistic unit and the global meaning of the sentence are determined simultaneously’ [25].¹²

On the contrary, the change of a single morphosyntactic sub-unit or detail does not change that easily the perception of the whole meaning of the sentence. Actually, it can be observed that, in the spontaneous/ colloquial speech of healthy people, a lot of morphosyntactic errors are committed without affecting communication. By using the same example quoted above, the change of the word ‘ironed’ by ‘give’ instead of ‘gave’ or ‘gives’ (i.e., ‘my mother give a kiss’) maintains the meaning of the new sentence in general terms. By using another example with a more serious error like ‘the park was placed on the statue’ (an inversion error which can be mediated by semantic or syntactic reasons) listeners will still understand the entire meaning of the sentence. That is so because listeners correct the unfeasible/ funny detail thus maintaining the balance between the whole and the parts [26]. When this balance in the sentence is broken, and the whole meaning succumbs to the parts, the sentence becomes fragmented: Verbal language disintegration occurs when the context, the subjective and objective cues, as well as the communication efforts made by the involved persons are useless.¹³

Beyond specific cases of verbal language fragmentation, researchers try to maintain the balance between the whole and the parts by modifying just a semantic or syntactic detail in the experimental condition and leaving constant the rest. In this attempt, and beyond the interaction between semantics and syntax, researchers also involve the interaction between analysis and synthesis, which is dependent of age and education among other factors. Complex tasks involving these four functions are better accomplished from teenage years onwards. Complementary cognitive requirements such as divided attention, mental tracking, attention span, working memory, and executive functions may be necessary for these tasks. For example, it is well-known that if an analytic task wants to be carried out, the interviewee first has to have an idea of what is going to be divided. So, if the background of the biggest stimulus cannot be preserved by any cause, the analytic task will be impossible to be carried out. These developmental aspects are not ignored by researchers.

Complex syntactic analyses are acquired later in the development. Furthermore, when this learning is incipient, it is probable that the more conscious and broken is the syntactic analysis, the more difficult is its intuitive perception: Children probably have to inhibit synthesis or integration in order to analyze. Later, they will automatically complement analysis and synthesis and use them together thus organizing harmonically the sub-units

¹² Unlike the semantic processing of a sentence, the syntactic processing probably involves that each linguistic subunit and the global syntactic structure are determined consecutively, particularly in experimental contexts (see below).

¹³ When the language fragmentation goes beyond a single sentence or moment, and affects the entire verbal language, it is time to analyze the type and level of distortion in order to determine the type and level of aphasia.

within the biggest unit. Correctness (culture) also depends on the level of education, which is not a minor detail in the neurobiology of language.

Nonverbal processing comes first in the evolution [27, 28], then the verbal-auditory one, and then the verbal-visual one. Concurrently, and as it is reported by Catani and Bambini [16], semantic processing would come first than syntactic analysis. The last acquisitions are the most culturally biased [29] and, usually, the less cognitively crystallized. Brauer, et al., [30], observed that seven-year-old children possess a brain connectivity pattern of the dorsal language route that is similar to the one observed for adults. Those authors affirm: 'It is at around this age that children start to successfully process more complex and also passive sentence structures' It is also hypothesized that seven-year-old children do not have yet the ability to process complex sentence structures (as may be processed by adults) since the dorsal pathway is still not yet fully mature. Brauer, et al., [30] also leave open the question about how the connection between neural and syntactic developments actually occurs. In any case, the ability to consciously disentangle the components and rules of syntax in a sentence is a late acquisition.

If syntax was developed to favor the organization and sense of communication (i.e., if the main point of the sentence compartmentalization and word sequencing is to transmit information with meaning) maybe the most important syntactic components are those which are more prone to affect the highest-order meaning. In the erroneous example quoted above (i.e., 'my mother give a kiss') the syntactic distortion does not change the meaning of the sentence because, probably, this is a minor detail for communication. To a certain extent it seems that evolution (unlike some researchers) prioritizes meaning over specific details of form and syntax. When morphosyntactic rules are momentarily broken, semantics becomes dominant in order to protect communication: Given a certain conversation in which the speaker cannot articulate sounds or words for an instant, it is common that the speaker claims: "You know what I'm saying;" and it is also common that the listener pay attention to what the speaker wants to say as well as to what he/ she as a listener wants to listen in order to not to interrupt the feedback.

When morphosyntactic resources are at risk, semantic units of any size cannot be constructed or correctly linked with other units. But when semantic resources are at risk, the morphosyntactic resources lose their reason for being; therefore, communication in itself is at risk. However, and contrasting with other types of language, 'pure' verbal language requires from the interaction between semantics and syntax.

Unlike semantics, the syntactic processing described by Catani and Bambini [16] as 'syntactic analysis' is probably more related to the principles of an analytic approach for understanding (or perceiving). Under this perspective, maybe a sentence is conceived as a linear arrangement easily dissectible throughout several compartments, from the beginning to the end of the linguistic unit. When the direct comprehension of a sentence from the beginning to the end (or from the left to the right in the case of reading) is experimentally hampered by a linear configurational complication, such complication is usually defined as a syntactic manipulation in neurobiological research settings. Under the influence of such complication, the sentence linear arrangement has to be altered in its standard form of being perceived (including loops and prolongations), or in its natural way of being explored

(including interruptions and comebacks) so that the comprehension task (i.e., the cognitive synthesis or semantic integration) can finally be achieved.¹⁴

When the syntactic processing is neurobiologically evaluated, there are at least two sentences to be compared being one of them simpler (to be constructed or understood) than the other.¹⁵ When syntactic comprehension and expression are evaluated, researchers may force interviewees to pay attention, for example, to the analysis of the form in which the interviewer is expressing the sentence. By this means, researchers (rather than interviewees) are sometimes putting syntax as figure and semantics as ground.¹⁶ Perhaps the ability to bring awareness to certain unconscious processes (which at the moment of the evaluation are already automatically made) is easier for syntactic than for semantic integration tasks.

Apparently, syntactic manipulations have had positive results for neurobiological findings.

Hagoort and Indefrey [17] observe that sentences containing a subject -relative clause (e.g., “The reporter who attacked the senator admitted the error”) are found to be easier to understand than sentences with an object -relative clause (e.g., “The reporter who the senator attacked admitted the error”). On the one hand, these authors highlight the integration between semantics and syntax and some subtle questions concerning the impossibility of studying both processes as separated ones are suggested in the introduction of their work. These authors affirm that the degree of separation between networks for syntactic and semantic integration is not so clear:

“Separation of these networks is nontrivial because syntactic differences are not without semantic consequences...A difference in syntactic structure clearly has immediate consequences for mapping grammatical roles (subject, object) onto thematic roles (agent, undergoer) and hence for the...conceptual/ semantic representation of the sentence” pp 350.

On the other hand, these authors attempt to segregate the two types of processes as much as possible using data from a meta-analysis of numerous functional imaging studies. With this vision in mind, they follow their dissertation writing a subtitle where the syntactic processing is put against the semantic one, and begin such section with this sentence: ‘So far, the available information is most clear for the areas involved in syntactic analysis’.

It is beyond any dispute that fertile information can be obtained from the use of some syntactic-analytic paradigms. For example, some interesting effects can be discovered by restricting the syntactic analysis just to comprehension (listening or reading), and by

¹⁴ From a simplistic point of view, and excluding complex interactions among semantics, syntax, analysis, and synthesis (see above), it could be said that, overall, when morphosyntactic processing is involved in expression, a top-down arrangement would be dominant; on the contrary when morphosyntactic processing is involved in comprehension, a bottom-up arrangement would be dominant. When the research involves healthy adults and complex syntactic analyses, bottom-up and top-down perspectives will interact.

¹⁵ If math performance is compared to syntactic performance, the operations of 3+3 and 18/3 produce the same result, which might be considered the final meaning, but both operations differ in quality and complexity. Both operations also have their own meanings and labels.

¹⁶ The 10-item version of the Northwestern Anagram Test, used by Catani et al. [31] which measures object- and subject-extracted ‘who’ questions (e.g. Who is the groom carrying?, Who is carrying the bride?, respectively) apparently is an example. In this test of grammatical processing, which has to be answered with visual stimuli, the patient is asked to order single words, each printed on a separate card, to correctly depict the action in a target picture.

assuming that, before integrating the sentence components as a whole, interviewees can sequentially detect the complication, i.e., interviewees can pay attention to the ambiguity, the error, the difficulty, the object or subject used in a certain order, the verb used in a certain form, etc. when such complications appear in the line of the sentence. Within this framework, Malaia and Newman [32] carried out an EEG study in which they analyzed the topographical distribution of alpha power to identify the time course of the linguistic binding process during word-by-word sentence reading. By manipulating semantic information (e.g., noun animacy) and syntactically-relevant information (e.g., verbal template), these authors demonstrated ‘that the processing of semantic and syntactic features during sentence comprehension proceeds in highly integrated fashion using gating of attentional resources to facilitate rapid comprehension, with attentional suppression of global alpha power to facilitate interaction of local networks.’

At the present time, there are few studies which escape from the hegemonic position and, thus, few authors who demonstrate a neurobiological interaction rather than dissociation between semantics and syntax. Besides, and by following the new trend, it is generally assumed that semantics is an inferior level of analysis within morphosyntax: Changes in syntactic structures would not affect semantics or, if so, they can still be considered pure syntactic changes. Under this analytic/ syntactic-dominant view, semantics would apparently be represented by the elementary or lower-level units useful to construct the bigger structure of ‘syntax’ (not the bigger structure of semantics).

Hagoort and Indefrey [17] affirm that syntactic integration cannot simply be reduced to semantic one. So, and based on neurobiological findings, this trend would include the more basic semantic elements (usually single words or simpler-than-sentence semantic units) within wide-ranging syntactic operations. From this perspective two expressions can be syntactically matched even if they are semantically empty (see, e.g., [5, 8]) but not vice versa. Under this view, syntax is considered superior to semantics, which serves to build syntax.¹⁷

LINGUISTIC MANIPULATIONS AND CONCEPTS: NEUROPSYCHOLOGICAL USES AND INTERPRETATIONS

Disordering or changing the words of a sentence is effortless in view of its linear characteristics; the question is how the interviewee will semantically perceive those changes. Without the researchers’ interventions, it is usual that the interviewee’s brain correct the input distortions to a great extent. Let’s take the following example with five specific words (‘car’, ‘speedy’, ‘the’, ‘is’, and ‘red’), used with an unusual syntactic structure: article + adjective + adjective + verb + noun. Then (and obviously presented in a methodologically reliable context) ¹⁸ it could be possible that a rare expression like ‘the red speedy is car’ is neurobiologically perceived by the interviewee as a more common sentence like ‘the red car is speedy’ or ‘the speedy car is red’. Thus, the interviewee would be semantically matching

¹⁷ Under this view, the content (e.g., the cake mixture) has turned out useful to improve the presentation of the mold or, worse, the content has turned out to be just as an accessory that can be used or not.

¹⁸ If the expression ‘the red speedy is: car’ is applied in a context where the interviewees have to guess what moves at high speed, the example will not be relevant. By the way this (personal) semantic association shows how the brain is always looking for a meaning where an unusual expression can fit: A visual image appears, for an unusual expression.

(perceptively correcting) the rare expression with a more frequent one. Outside the laboratory, this is a common situation in particular if the wrong sentence is quickly said within a correct linguistic background or context. Even inside the laboratory, the experimental context in which a distortion (or peculiarity) is included is also important: If one unusual sentence is included within a context of usual series of sentences, the change will be easily detected. The balance between usual and unusual conditions is an intervening variable. At once, if one distorted word with low semantic or syntactic weight in the sentence is included within a context of words with high linguistic weight, the change will be uneasily detected. If this is not so, at least it would be worth studying at what time the experimentally manipulated 'sentences' begin to be neurobiologically perceived as fragmented sentences, isolated phrases, or series of words. On the other hand, if semantics wants to be excluded (or preserved constant) from a syntactic experiment, ideally the stimuli to be compared should be equally easy to understand.¹⁹ Besides, in the paradigms that compare sentential conditions in common with non-sentential/ asyntactic ones, these conditions should match in semantics as much as possible, in particular if they are used for making semantic inferences. However, all these control conditions taken together are very difficult to achieve.

In fact, and based on the neurobiological consequences of the current hegemonic theory, it does not matter if semantics and syntax differ in quality or not; they can actually be compared, measured by the same yardstick, and put in the same line of methodological and linguistic analysis. If there is some kind of interaction in their psychological/ initial factors, they finally get dissociated to the searched endpoint. May be this is a case where the end justifies the means because, by these means, researchers have found the neurobiological differences they were looking for. Following this way of thinking it could be said that, at the present time, behavior appears as a sort of 'black box' within the manipulable inputs and dissociable outputs of neurobiological experiments. That is so, even when the inputs in themselves are confused and, also, part of the 'behavioral black box'. Besides, it is difficult to understand that clear outputs can emerge from confused inputs. Hagoort and Indefrey [17] observed, for example, that Brodmann area (BA) 44 activation is clearly driven more strongly by syntactic than by semantic demands, suggesting that this region contains neuronal populations involved in syntactic operations *per se* or that the semantic consequences of such syntactic demands (e.g., difficulty of thematic role assignment) are processed by neuronal populations that differ from those processing other kinds of semantic consequences.²⁰ This

¹⁹ The use of active and passive voice, e.g., is considered a classical paradigm for assessing syntactic processing [5]. However, the level of difficulty and the frequency of use of the two sentences are not matched; passive voice is acquired later and is more difficult to be constructed and understood than active voice. So, not only two levels of syntactic functioning (and two stages of verbal development) are compared, but also two types of semantic units. As said above, researchers are changing two categories at a time for assessing one attribute which includes the other.

²⁰ Hagoort and Indefrey [17] also observed a distinctive activation pattern in the posterior left inferior frontal gyrus (LIFG): Syntactic demands activated more dorsal parts (BA 44/45) and semantic demands activated more ventral parts (BA 45/47) across all kinds of increased processing demands (violations, ambiguity, complexity) and in studies performing direct comparisons of high syntactic and semantic processing demands. Additionally, the dorsal/ventral gradient observed in the LIFG seems to be mirrored in the left posterior temporal lobe. Alternatively, Catani and Bambini [16] propose that the fronto-temporal networks for syntactic analysis are associated with the long segment of the arcuate fasciculus (the dorsal network) while the anterior temporal networks for lexical and semantic processing are associated with the middle and inferior longitudinal fasciculus, the uncinate fasciculus, and with the extreme capsule/inferior fronto-occipital fasciculus (the ventral networks). Both teams found dorsal-ventral dissociations for syntactic-semantic operations, respectively, in agreement with the anatomical proposal of Hickok & Poeppel [19].

statement leaves open the possibility for other interpretations (more integrative ones) regarding the relevance of semantics compared with syntax. For example, that semantics can only be ‘affected’ by syntax in the same way that can be affected by many other verbal (and nonverbal) factors or, maybe, that ‘semantic integration cannot simply be reduced to syntactic integration’ (see above the opposite affirmation expressed by Hagoort and Indefrey, [17]).²¹ Almost certainly, verbal integration cannot be reduced to just these two psychological functions, whatever are their natures or levels in the hierarchy of language.

Semantics and syntax can be considered verbal organizers with different rules of organization. Semantics and syntax supposedly represent useful processes to sort, dissociate, and combine words within a linguistic context. It is generally accepted that sorting words by their relationship with the objects in the world involves a semantically driven process, while sorting words by their relationship with other words in the sentence involves a syntactically driven one. But there is also a world of words, in which every label and group of linked labels not only have their own meanings, but also generate new meanings when they are dissociated or combined. Researchers are trying to elucidate this organization and its rules. However, the hierarchy which organizes the different levels (or categories) of these linguistic processes is still today difficult to validate. I.e., the art of combining elements is cognitively superior to the elements themselves, the problem is that, for verbal language, there is much debate about the art and the elements. Such art is these days interpreted as syntax. However, the combination of elements arises from (and is addressed for) something, which gives sense to the whole creative process. The ability to give sense is semantics. Most probably, multiple psychological functions and sub-functions (including semantics and syntax) are acting together for verbal integration thus involving many connections in many directions in the brain. For example, the generation and preservation of the highest levels of cognition supposedly facilitate the processing of the lowest ones but, for that, the lowest ones have to exist [26]. However, the current (widespread) neuropsychological techniques have not yet transferred such hierarchical integration to statistically based theoretical frameworks.

‘The notion of bio-physiological dimensions for verbal language (and aphasia) involves the notion of neuropsychological functions and the need of validation... It is a common expression to say that a test measures certain neuropsychological functions. Yet, those functions are concepts which need to be empirically validated...The constructs of verbal comprehension and verbal expression are among the most widely used in literature ...Impairments in such domains may be related to comprehensive and expressive aphasias’ [29].

Considering some of the most used neuropsychological constructs in the scope, it is worth noting that semantics and syntax are more abstract concepts than comprehension and expression, which involve a more direct link between their conceptual and empirical definitions. Semantics and syntax, on the other hand, need further studies on the interaction with other verbal and cognitive constructs. The study of the interaction between the semantics-syntax system and other functions such as speech, repetition, naming, reading,

²¹ Actually, the exact words of Hagoort and Indefrey [17]) were: ‘syntactic unification cannot simply be reduced to semantic unification.’ The term ‘unification’ is used by these authors to indicate the real-time assembly of the pieces retrieved from memory into larger structures, with contributions from context.

writing, phonemic processing, attention, memory, and praxia, among other functions, is essential for both language and aphasia.

Within the field of aphasia, and by using the categories of nonfluent/agrammatic, semantic, and logopenic aphasias, the guidelines proposed for the PPA variants [3] rely more on the semantics-syntax organization than on the comprehension-expression one. Recent empirical studies on the matter [33], however, tend to dichotomize the PPA outcomes towards the classical difference between fluent and nonfluent aphasias, instead of the three variants initially proposed by the guidelines of 2011 [3].

Before continuing, it would be suitable to clarify certain points: As said before, the dorsal-ventral dissociations described, respectively, for syntactic-semantic operations [16, 17] as a general rule agreed with the anatomical proposal of Hickok and Poeppel [19]. However, this last model tried to integrate different theoretical views, types of tasks, methodological approaches, as well as different samples, including patients and healthy participants. Moreover, Hickok and Poeppel [19] predominantly reviewed the auditory and motor representations of speech, explicitly, the processes of speech perception and speech production whereas Catani and Bambini [16] and Hagoort and Indefrey [17] predominantly reviewed verbal comprehension in healthy participants. Speech production was rather avoided in these last two models.²²

Regarding the present work, ‘verbal perception and verbal production’ will be seen as equivalent to ‘verbal comprehension and verbal expression’. At once, the conceptual distinction between the ‘comprehension-expression’ organization and the ‘semantics- syntax’ one will be (partly) justified.

The ‘comprehension-expression’ organization and the ‘semantics- syntax’ one involve two different systems of classification, which are not mutually excluding. If correctly validated, both are plausible systems of verbal organization and interpretation. Comprehension involves both semantics and syntax, and the same applies to expression. Simultaneously, and if semantics and syntax are in fact psychologically dissociable processes, semantics would involve both comprehension and expression, and the same would apply to syntax (e.g., if the evaluation begins with syntax, then syntactic comprehension and syntactic expression will have to be evaluated). Within this line of reasoning, if comprehension and expression neurobiologically overlap it would be expectable that semantics and syntax also overlap.

Alternatively, there is a frequent confusion between comprehension and semantics on the one hand, and between expression and syntax on the other hand, which will not be discussed here. Both systems of organization are interlaced but different. When people are verbally expressing or comprehending something, they are using the resources of semantics and syntax.²³ But when semantics and syntax are established as the initial and broader categories of analysis, then verbal comprehension and expression will function as their sub-categories or components.

There are also some pragmatic differences between both systems of classification: Unlike the dissociation between comprehension and expression, the dissociation between semantics

²² To be more specific: Hagoort and Indefrey [17] conducted a meta-analysis of neuroimaging studies which dealt with sentence comprehension in healthy participants; Catani and Bambini [16] also reviewed neuroimaging studies but mainly pointing at the recent advances in tractography, Catani and Bambini [16], on the other hand, also incorporated some PPA observations.

²³ Vice versa cannot be that naturally said because semantics and syntax cannot be directly observed as behaviors.

and syntax is not easy to observe even using complex linguistic evaluations. Maybe this is so because the semantics- syntax organization was more conceptually conceived and used in academic and linguistic settings where, still today, there is debate about the differences between semantics and syntax. The concepts of autonomy, assessment, hierarchy, interdiscipline, models of evaluation and interpretation, among other topics, are still discussed in relation to semantics and syntax. Additionally, some new neurobiological models on the matter tend to exclude comprehension and expression from analysis even though the psychological dissociation between those two functions is naturally conceived and observed by any person. Parents, teachers, caregivers, nurses, and so on may frequently say: ‘he/she understands everything but he/she can speak almost nothing’ when referring, e.g., to two-year-old children or to patients with nonfluent aphasia. It is not necessary to be a neuroscientist to understand the concepts of verbal comprehension and expression. (Obviously, it is also simpler for neuroscientists to understand, explore and operationalize those concepts than the concepts of semantics and syntax). Accordingly, it is common knowledge that the behavior of verbal comprehension appears earlier in the ontogeny than verbal expression. As well, it can be observed in clinical settings that comprehension is usually recovered before expression after brain injury, and that comprehension is a strong condition for social adaptation and for recovering expression: if comprehension is not considerably (and quickly) recovered, the prognosis for the patient is poor.

Considering some pragmatic differences between both systems of classification in the field of aphasia, it is logically and empirically plausible to verify the following statement:²⁴ ‘without comprehension, it cannot be a coherent expression’, which is true (see below). It is also logically and empirically plausible to verify that ‘without a coherent expression, it cannot be comprehension’, which is false; nonfluent aphasia is an example.²⁵ Unfortunately, similar statements are difficult or impossible to verify in the ‘semantics-syntax’ system, and this difficulty goes beyond the field of aphasia. For example, the affirmation: ‘without semantics, it cannot be a coherent syntax’ is dependent on the position in which both concepts are pondered. For example, for authors who consider that syntax is underpinned on the underlying semantic intention or perception, the statement is true. For those who consider that syntax is a formal reasoning, the first part of the statement (the antecedent) is irrelevant and, so, the statement itself is irrelevant. For those authors who consider that the antecedent and the consequence are relevant, the statement will only be logically and empirically verifiable if the sentential syntax is considered along with its semantic content. Under such circumstances, authors specifically verify what happens with or without semantics. The other way around (‘without a coherent syntax, it cannot be semantics’) is also difficult to analyze.²⁶ For example, and even for authors who, avoiding radical views, specifically verify what happens

²⁴ Of course, comprehension, expression, semantics, and syntax are not dichotomous variables. The examples are specified with didactic purposes to show the complexity of comparisons. Besides, all those concepts are not equivalent.

²⁵ It could be said that, in the particular case of nonfluent aphasia, the function of comprehension acts rather independently of the function of expression.

²⁶ If: 1) semantics is considered synonymous with the whole sentential meaning, and: 2) a coherent syntax with such concept of semantics is considered synonymous with ‘a sentence’, then the sentential semantic unit (or gestalt) cannot be reduced to its elementary units. For radical views, there will be radical outcomes. E.g., for authors who consider that a coherent syntax (as a formal reasoning) is responsible for the meaning of any sentence, the statement is true.

with or without a coherent syntax [17], it is difficult to say if the supposedly syntactic associations are in fact syntactic or semantic associations (see above the ‘semantic consequences’ of some syntactically coherent (and conventional) sentential examples [17]).²⁷ In any case, the semantics-syntax system is logically and empirically more complex and devious to analyze than the comprehensive-expressive system.

In spite of this, and considering the new neurolinguistic models on the matter [16, 17] it seems that, while the dissociation between comprehension and expression is not reflected in anatomical sites, the dissociation between semantics and syntax is, anatomically, clearly observed.

Beyond such widespread (and amazingly consistent) neurobiological findings, the psychological interpretations about the semantics-syntax system remain ambiguous.

Hagoort and Indefrey [17], for example, affirm:

‘Given that speaking and listening have different processing requirements, the same areas may not be recruited to the same degree in these two cases ... This difference between speaking and listening, however, does not detract from the finding that when needed, the same areas subserve unification operations in language production and language comprehension. Even less clear is the degree of separation between networks for syntactic and semantic unification.’ pp 350²⁸

However, Hagoort and Indefrey [17] finally conclude:

‘...there is strong evidence for shared circuitry for core aspects of sentence-level language production and comprehension’ thus confirming once more that the key psychological aspects to understand the neurobiological basis for language are semantics and syntax, although it is not psychologically quite clear what they are.’ pp 359.

Regarding this issue, some unanswered questions will remain: If semantics and syntax cannot be psychologically and unquestionably dissociated (or the dissociation depends on theoretical/ abstract linguistic taxonomies, rather than on objective behaviors); why are semantics and syntax neurobiologically dissociated? Why are the neurobiological findings taken as evidence of the psychological dissociation between semantics and syntax thus discarding their interaction? Neurobiologically speaking: Why comprehension and expression overlap but semantics and syntax do not overlap if all these functions are not mutually excluding? Is it possible that researchers are measuring linear versus nonlinear neurolinguistic processes, or sequentially- perceived versus simultaneously- perceived semantic units? The underlying epistemological viewpoint will determine the way of validation of all these functions, and their interactions, in future studies.

²⁷ See also the definition of ‘a sentence’ given in the initial comments of this article, in particular for non conventional syntactic structures.

²⁸ See above (in a footnote) the meaning of ‘unification.’

SOME QUESTIONS ABOUT APHASIA ANALYZED WITHIN THE NEW EPISTEMOLOGICAL FRAMEWORK

Trying to ignore all the disquisitions expressed above regarding the characteristics of semantics and syntax, and trying to assume that: a) semantics and syntax do not differ in quality (explicitly, that they are comparable linguistic processes), b) the parts and the whole are equally important for both processes, and c) all the factors which eventually differentiate both processes can be manipulated by controlling experimental commands and conditions, two consequences for the aphasia topic can be proposed:

- 1) Patients with nonfluent/agrammatic aphasia (who supposedly have morphosyntactic impairments) cannot form words or bigger verbal constructions correctly. Maybe these patients can sometimes utter isolated words or even isolated sentences correctly but the rule is that they cannot properly form words, sentences and so on. That is so because they cannot link the components of those units.²⁹ Beyond the fact that agrammatism in itself implies that some words are missing, if it is also assumed that these patients really have morphosyntactic impairments, then they should have trouble with naming. However, in the PPA guidelines, for example, impaired naming is not described as a symptom for this type of aphasia [3]; patients with nonfluent/agrammatic aphasia only have ‘inconsistent speech sound errors’ for otherwise semantically correct units. That is so even though the observational boundary between sound errors and phonological errors is diffuse: Both types of error may produce phonetic /phonemic paraphasias of any size (including small scale problems such as difficulties with a single sound or letter per word).³⁰ On the other hand, it would be incorrect to reason that patients with nonfluent/agrammatic aphasia show a correct speech just for semantic units at the single-word level because the lack of fluency can go from subtle impairments to mutism, thus covering a wide range of expressive semantic impairments. This range would go from simple word-distorting phonemes, morphemes (of any type) passing through single-words, to finally reach sentences, paragraphs, and so on. Or from the opposite perspective, if it is assumed that these patients do not have semantic impairments, then any semantic unit should be preserved, which is false. Sentences and words are incomplete, disorganized, and distorted because the whole expression is imprecise and nonfluent. Additionally, if the syntactic analysis is defined as a superior mechanism which organizes the inferior level of semantics [16, 17], when the superior mechanism is affected, the inferior one will become disorganized. I.e., if syntax is affected, semantics will be affected.

²⁹ Just as a comment: The impaired comprehension of syntactically complex sentences is considered by some authors a symptom of nonfluent aphasia (see, e.g., [3]). In our experience, it may be a common disturbance of brain injured patients in general; it is not pathognomonic of patients with nonfluent aphasia and, so, it is not a valid construct for this aphasia. Reciprocally, patients with any type of aphasia usually have many cognitive domains impaired [9, 29].

³⁰ Some deficits described in the PPA guidelines [3] are difficult to verify; for example: ‘effortful, halting speech with inconsistent speech sound errors...’ which belongs to the agrammatic variant, versus ‘speech (phonologic) errors in spontaneous speech ...’ which belongs to the logopenic variant. These deficits are not usually shown by means of empirical definitions in PPA studies, thus leaving to the discretion of each observer the final interpretation.

Independently of the above said and trying to understand this position, it could be thought the following: Cognitive functions which are less crystallized, less frequently used, more complex, or later acquired, tend to be the most vulnerable to brain injury. If that is so, and considering that syntactic ability is a late acquisition; is it probable that only the most formal details of verbal language are affected in patients with nonfluent/agrammatic thus producing a less sophisticated speech? If this temporal gradient really exists for syntactic functions; is there a possibility that nonfluent aphasia could be a less severe aphasia -rather than a different type of aphasia- in relation to the fluent one [34]? ³¹ Or from the opposite perspective, if it is assumed that semantics (which include nonverbal and multimodal signifier and signified sub-systems) is a more extended, crystallized, and resistant linguistic function in the brain; is it possible that all such neurolinguistic system inhibit the (pure semantic) naming errors in nonfluent aphasia? If this neurofunctional gradient really exists for semantic functions; is there a possibility that nonfluent aphasia could be a less severe aphasia -rather than a different type of aphasia- in relation to the fluent one?

Regarding just syntactic expression, it is difficult to understand the affirmation of Catani and Bambini [31] that there is one single restricted area in the brain which triggers verbal fluency. ³² According to that finding, the frontal aslant tract would activate morphosyntactic concatenations not only independently of the rest of the cognitive functions, but also independently of grammatical or repetition deficits. By assuming that such excitatory (pure frontal) site exists [16, 31]; is it possible that its inhibitory counterpart is verbal comprehension [34]? If the ability of action monitoring (see Bonini et al., [36] quoted by Catani and Bambini, [16]) is conceptually added to the function of pure verbal fluency of the frontal aslant tract, then it could be deduced an inhibitory counterpart for pure verbal fluency.³³ Obviously, that would be so on the assumption that action monitoring [36] also encompasses verbal language monitoring. Without going so far, and by only considering the verbal language system, if it is assumed that comprehension involves an extended brain network in the left hemisphere, comprehension can be such inhibitory counterpart.

- 2) Patients with fluent aphasia (who supposedly have impairments in the most basic semantic units), cannot retrieve words and cannot understand the meaning of those words correctly. Maybe these patients can speak a lot, or link many verbal units; maybe the quantity of language production is adequate or even exacerbated, but the rule is that the quality of utterances is incorrect. As a result, these patients can neither utter words nor form bigger verbal constructions correctly: Paraphasias of any type, confusion between previous and subsequent words within a sentence, confusion between previous and subsequent phonemes/ sounds within a word; ‘word salad’, jargon, intrusions, perseverations, as well as circumlocution, anomia, and word-finding difficulties can be observed in patients with fluent aphasia. As they cannot retrieve and understand single words, more so they cannot retrieve and understand relationships among multiple words. Curiously, some authors believe that these patients have preserved syntax [3].

³¹ Accordingly, is there a possibility that nonfluent aphasia could be the first to appear and/or the more frequent aphasia?

³² Peterson and Hagoort [35] affirm: ‘For language, as for other cognitive functions, the function-to-structure mapping as one-area-one-function (as currently conceptualized) is likely to be incorrect. Brain regions typically participate dynamically as nodes in more than one functional network...’

³³ It is worth remembering that the frontal aslant tract does not belong to the level of syntactic analysis in the model of Catani & Bambini [16],

However, if the most basic semantic units are ambiguous, disordered or absent; how can they be uttered without affecting syntax? Patients with fluent/ semantic aphasia cannot have a 'fluent language' because they cannot name and/or comprehend, among other impairments. They show substitutions, omissions, inversions, distortions and so on for phonemes, graphemes, words (of any type), sentences and bigger verbal constructions. Yet, and considering PPA [3] it is stated that, in the semantic variant, syntax is spared. Wilson, et al., [37] affirm that 'syntactic deficits can be defined as limitations in syntactic processing, which may be manifest in production, in comprehension, or most typically, in both production and comprehension.' Subsequently, those authors affirm (with 'robust body of evidence') that in most patients with semantic variant PPA, syntactic processing is strikingly spared. However, and considering more experimental paradigms [5, 17], even if patients are recruited [5], syntax can only be evaluated if semantics is spared.

Returning to the relationship between fluency and aphasia [31] previously analyzed in nonfluent aphasia, it is reasonable to conceive that, in fluent aphasia, the function of fluency is triggered in view of the lack of comprehension. Nevertheless, as the articulation or linking mechanisms (in the same way as the word retrieval mechanisms) cannot be monitored and amended, an appropriate sequence in the units of the language cannot be expected either. Interestingly, if there is a brain site which triggers verbal fluency independently of its quality (i.e., 'how much' a person speaks independently of 'how well' [38, 39]) that could explain why patients with fluent aphasia speak neither accurately in the semantics nor in the syntax.³⁴

Unlike the expressed in the preceding paragraph, and trying to understand the affirmation of Wilson, et al., [37] regarding syntactic preservation in the PPA semantic variant, it could be thought the following: Although the ability to retrieve words and the ability to link words are mechanisms with an important automated component, maybe it is effortless to bring awareness the syntactic linear rules than the semantic nonlinear ones, e.g., it could be effortless to remember that an article comes before a noun than to unravel the intricate (and more automated) semantic relationships among word families. Even assuming that the syntactic rule might be perfectly retrieved by these means, the interaction with the retrieval of the rest of words cannot leave aside. Under such circumstances, patients might be able to use syntactic structures but all types of erroneous words will be placed inside those structures. For example, articles will be searched from the semantic family of article words which, for having fewer options (and less complexity) than the family of nouns, will yield fewer errors than nouns but, finally, the organization of sentences will be affected by the use of multiplicity of quasi articles followed by quasi nouns and so on.

In summary, and even using the new way of thinking, it is expectable that nonfluent aphasia shows semantic problems and fluent aphasia shows syntactic problems. It is also possible that there is just a degree difference between both aphasias.

³⁴ Analyzing the PPA guidelines [3] it seems that patients with nonfluent aphasia only have problems with the quantity of expression, and patients with fluent aphasia only have problems with the quality of expression. Quantity and quality were used in the item: Evaluation of Spontaneous Speech in the Brief Aphasia Evaluation [38, 39] but the deficit was analyzed, in this case, as a combination of both attributes.

APHASIA AND SOME OF ITS METHODOLOGICAL CONTROVERSIES UNDER THE PRESENT WORK PERSPECTIVE

Taking into consideration the comprehension-expression system and studying samples of patients and healthy participants, Vigliecca and Baez [29] carried out an integrative (empirical) study addressed to obtain better definitions for verbal functions and sub-functions including: a) their organization under a hierarchical model, b) a lesion-based approach, and c) the analysis of a homogenously verbal and short aphasia test. Using confirmatory factor analysis and the Brief Aphasia Evaluation (BAE), a valid explanatory model for the neuropsychological characterization of aphasia” was proposed.

The model encompassed [29]:

- a) An all inclusive verbal organizer from which two successive organizers emerged.

The two successive organizers were:

- b) A more general classification which essentially included verbal comprehension and expression, in addition to a “complementary” verbal factor which included praxia, attention, and memory.
- c) A more specific classification which included the individual (and correlated) constructs of auditory comprehension, repetition, naming, speech, reading, writing, and the “complementary” functions.³⁵

By following this approach (where the aphasia patterns are exhaustively analyzed) all the patients fall inside the classification system; consequently, the gradual improvement of the aphasia theory is guaranteed. On the contrary, when only certain types (and number) of aphasias are considered as valid, without empirically demonstrating why other combinations of symptoms are not, the double dissociation which otherwise would be explicit becomes impossible to verify. The present probabilistic approach allows verifying this type of dissociation because any combination of symptoms is detected (and shown) and the theoretical interpretation is not left to chance. Additionally, as any pattern of the latent language impairments can be recognized, neurorehabilitation professionals are able to work with the particular characteristics of the patient, without being forced to follow a predetermined diagnosis typology. The model proposed in that work may represent a valid tool in the attempt to find new classifications or constructs for aphasia disorders (and their biological causes) beyond some widespread definitions and typologies [29].

New models concerning aphasia definitions, classifications, and their relationship with brain networks are necessary in particular because, so far, serious methodological inaccuracies can be verified in the available models.

Despite significant improvements observed in the psychological methods during the last years, the psychological outcomes are still puzzling. In the Publication Manual of the American Psychological Association [40], the methodological need of describing in detail the

³⁵ It is worth noting that, except for the “complementary” functions, all the underlying verbal constructs follow the behavioral order of appearance in the ontogeny.

variable conceptual and operational definitions is stated. However this is not fully respected, particularly in clinical settings.

If the conceptual and the operational definitions are confused, the theory gets into an endless loop in view of the lack of distinction between conceptual agreement and real proofs [4, 26]. As concepts are still used during the phase of empirical validation, the hyper production of pseudoscientific articles becomes facilitated. Additionally, the use of typical cases seriously restricts progress [41].³⁶

By using the method of selecting patients according to quantitative suggestions such as: ‘at least one of these criteria’, ‘criteria X to Y must be absent’, ‘at least 2 of 3 criteria’, etc., patients are actually grouped according to the number of present indicators (from zero to all the indicators). Although this method may produce hundreds or thousands of groups, experts only consider less than a handful of groups, which are in fact just ‘the typical cases’. As the empirical/ operational definition is not exhaustive, the classification of ‘the real cases’ is impossible to be accomplished. Finally, the typical-case classification is exclusively made by expert-based evaluation.

‘Under a correct empirical definition, all the cases should be feasible of classification but if real persons are confounded with ideals, many cases will be left out. That is why conceptual definitions should not be used for empirical demonstrations’ [26].

When certain psychological qualities are intentionally selected to construct a ‘typical’ pattern so that such pattern agrees with what is expected by a theory, the pattern is constructed *a priori* and the research is biased. I.e., when only the diagnosis categories which confirm the syndromic hypothesis are included, the work is not scientific because there is no way of verifying the actual syndromic pattern in either the excluded cases or the compulsorily included ones.

In the case of aphasia, if only certain combinations of indicators are taken as the key ones for classifying patients in just, let’s say, three aphasia categories (of the thousands of possibilities), then, those three categories will be at once the conceptual and the operational definitions. That is so because the patients’ real responses are forced to go to those three conceptual categories. Since the categories of the dependent variable are constrained to be, as much as possible, the three initially conceived, methodological circularity is produced.³⁷

This methodological difficulty can be seen in a paragraph taken from Mesulam, et al., [2]. The paragraph shows that 20% of the patients were (empirically) chosen to be included in the (conceptually) predetermined categories, namely, agrammatic (PPA-G), semantic (PPA-S), and logopenic (PPA-L) variants, in order to improve subtyping during demonstration. I.e., these authors went back to the concepts during the result section of the study, more specifically, during ‘the empirical validation of the classification guidelines’, even if the quantitative criteria (the tests, the cut-off points and the empirical definition) had already been selected. Mesulam, et al., [2] wrote the following theoretical interpretations in the Results (instead of writing them in the Discussion):

³⁶ This trend to use typologies can be illustrated with an analogous example in which three socioeconomic levels have to be empirically defined by using 15 supposed indicators [41]: If inexperienced evaluators are involved, they will tend to define just three ‘cases’: the typical multimillionaire, the typical representative of the middle class, and the undeniable poor. Thus, almost 0% of all the possible cases would be classified.

³⁷ Even the empirical definitions of the Western Aphasia Battery have not been exhaustively constructed since the cut-off points do not consider all the possible combinations among symptoms [42].

‘The classification guidelines of Table 1 lead to some ambiguity in differentiating PPA-G from PPA-L. For example, a patient with agrammatism, impaired repetition, impaired single-word retrieval and phonemic paraphasias would fulfil the criteria for both variants as long as motor speech, single word comprehension and object knowledge are spared. Thus, Patients 5, 8, 15, 17 and 20 fulfilled criteria for PPA-G as well as PPA-L. We chose to include the former two in the PPA-G group because of the prominent agrammatism and the remaining three in the PPA-L group because we interpreted the exclusionary criterion number 4 for PPA-L in Table 1 (‘absence of “frank” agrammatism’) specifically to designate ‘prominent’ abnormalities of grammaticality, such as those that should lead to overt morphosyntax errors in speech’ [2] pp 1544.

Apparently, by applying a combination between the empirical definition and the clinical/conceptual one, subtyping was improved. In this work, the authors wanted to test whether the recently published classification guidelines for subtyping PPA into agrammatic, semantic and logopenic subtypes [3] could be applied to patients with mild impairment. Regarding this outcome and the overlapping criteria for agrammatic and logopenic subtypes of primary progressive aphasia, Mesulam et al., [2] affirm: ‘Quantitative criteria were least effective in the distinction of the agrammatic from the logopenic variant and left considerable latitude to clinical judgment.’

This is an example in which the division between the theory, the methods, and the results is not clear. Moreover, if patients’ recruitment is based on this combination between the empirical definition and the conceptual one (instead of being based on an independent empirical definition) most of the cases of the dependent variable will be the theoretically expected ones.

To stop contaminating the results of the instruments (the real patient’s data) from previous conceptual definitions [4], the deductive inference from the concepts to the symptoms (the empirical indexes) should come first and, at the end of the research, separately, the inductive inference (the interpretations) from the symptoms to the conceptual syndromes. Otherwise, the initial syndromic typology may become unalterable and the exhaustivity of the potential aphasia patterns (the real syndromes) may be lost.

The most convenient way to improve the aphasia theory is to incorporate all the mixed cases in the classification, which is equivalent to say that ‘all’ the patients are included. Since most of the patients have mixed (not typical) clinical manifestations [1, 41, 43], all the response possibilities have to be collected. If a psychological technique has the appropriate psychometric properties, a simple sum of scores is sufficient to cover all the response possibilities and get a correct empirical definition. Since such definition has to be made with the instruments of each laboratory, there cannot be a universal empirical/ operational definition. Additionally, the use of different empirical approaches serves to ensure that the scientific progress does not stay fixed under a dominant position. ‘Unfortunately, most of the clinical definitions of typical syndromes have passed down from generation to generation based on tradition and agreement rather than on demonstration.’ [29]. It is expected that this trend changes with the improvement of psychological methods.

Although, methodologically speaking, there is not much difference between the variants proposed in the PPA guidelines [3] and those proposed in the classical aphasia syndromes [44, 45], the PPA classification uses more indicators (from 8 to 13 approximately, instead of 6) thus increasing the number of possibilities of combining symptoms and forming

syndromes (from 256 to 8,192 possible syndromic groups, instead of 64 [46]). Since impairments in semantic and syntactic functions are included in the PPA guidelines, experts had to incorporate more indicators to assess those symptoms. Additionally, and even if pure language impairments are extremely frequent in the scope, experts are compelled to combine symptoms to form more complex syndromes to respect the theoretical guidelines, e.g., a patient with semantic aphasia has to show troubles with naming ‘and’ comprehension. In the work of Mesulam et al., [2], 12% of the patients were not classifiable by the PPA guidelines. The authors stated: ‘All three stood out because of pronounced abnormalities in object naming. They came close to fulfilling the criteria for PPA-S except that word comprehension was preserved.’ Obviously, this would not happen under a suitable operational definition. The 20% quoted above, and the 12% quoted here would be included.

In the psychological typology proposed by the so-called classical approach, various language functions are simultaneously evaluated in order to detect typical aphasia syndromes or pure language impairments. Four basic language functions (repetition, comprehension, expression, and naming) and two complementary ones (reading and writing) are usually studied as the elementary aphasia constructs or symptoms. However, at least eight aphasia syndromes (Broca, Wernicke, conduction, anomic, transcortical sensorial, transcortical motor, transcortical mixed, subcortical) and at least three pure language impairments (alexia, agraphia, verbal deafness) are deduced from the elementary constructs. While the elementary constructs are at most six, the diagnoses are at least eleven. Yet, the diagnoses keep increasing because they have not been exhaustively defined and many aphasia patterns fall outside the classification system [47].

A similar increase of syndromes can also be observed for PPA in just four years: Three [3], four [2], or even six [31] variants (the semantic, logopenic, nonfluent, and/or agrammatic as well as the mixed and severe ones) have been described. Considering the 12% excluded above [2] maybe anomic aphasia could be computed as the seventh variant.

Recently, Mesulam and Weintraub [48] wrote a commentary (with the name: ‘Is it time to revisit the classification guidelines for primary progressive aphasia?’) in which they said:

‘Hair-splitting details of syndromic classification can hardly be expected to attract much attention. As in all areas of science, however, sound nosology and uniform nomenclature are important for progress in neurology. This is particularly true for the neurodegenerative syndromes, including primary progressive aphasia (PPA), where heterogeneity of phenotype and cellular pathology has defied attempts to coherent clinicopathologic correlations.’ pp 1108

The commentary was about an article of Wicklund et al., [49] where it was studied how well the consensus criteria could classify subjects with primary progressive aphasia (PPA) by following a quantitative approach. Thirty one percent of participants with a neurodegenerative speech and language disorder could not be classified, and twenty percent showed apraxia of speech without aphasia. The authors conclude: Application of consensus PPA criteria yields the three syndromic variants but leaves a large proportion unclassified. Therefore, the current consensus criteria need to be modified in order to improve sensitivity.

At the same time Mesulam et al., [50] observed that:

‘Individual features of the aphasia, such as agrammatism and comprehension impairment, were as informative of underlying pathology as more laborious subtype diagnoses. At the single patient level, no clinical pattern was pathognomonic of a specific neuropathology type, highlighting the critical role of biomarkers for diagnosing the underlying disease. During clinical subtyping, some patients were unclassifiable by the 2011 guidelines whereas others simultaneously fit two subtypes. Revisions of criteria for logopenic primary progressive aphasia are proposed to address these challenges’ pp 1176.

As shown in these quotations, psychological assessments are not relevant by themselves. Apparently, they can only be estimated as relevant if they help to find biological markers.

The syndromes of the PPA guidelines [3] were proposed to divide the clinical manifestations of PPA based on specific speech and language features characteristic of each subtype. However, if all of those theoretical syndromes have never been psychologically validated, they cannot be used as the gold standard for validating other measures addressed to assess, precisely, those syndromes (see, for example, Agosta et al., [33], described above).

In addition, aphasia patterns have to be discovered independently of their biological basis in order to avoid circularity. Nevertheless, this is impossible to do if brain imaging, neurobiological/ neurofunctional patterns, and/ or other biological indices are put together with the psychological patterns in the consensus diagnosis guidelines.

THE ‘OLD-FASHIONED’ VIEW OF PSYCHOMETRY

A psychological disorder and its biological causes cannot be established by convention.

The impetus to reach agreement with psychological events has led to the shocking situation in which a consensus-criterion article published in 1984, for example [51], has been quoted almost 22,000 times by April of 2015 as synonymous with the procedure for demonstrating diagnosis. Considering the guidelines of 2011 for primary progressive aphasia, that number was almost 800 in just four years [3].³⁸ As such psychological criteria were established by authority, its ‘validity’ does not require demonstration. Subsequently, clinicians and researchers are authorized to diagnose and treat patients without any other requirement than quoting those criteria. Within a certain clinical topic, there will basically be a single guiding criterion (excluding the almost identical ones), until the experts meet again. At the same time, journal reviewers usually demand that such criterion is quoted in the articles. In such a way, all the material and human resources are put at the service of the guiding consensus proposal, being the resources put at the service of getting *post-hoc* empirical validation the most noticeable.

Validity in psychology is usually confused with agreement, and agreement is usually confused with empirical consistency. By this mean, the intersubjective consensus of experts becomes a ‘theory’ and the subsequent studies will tend to confirm it, with minor details. As previously explained, all this occurs because the pattern of the patient’s psychological data is conceptually (not empirically) built. Finally, the supposed consistency is magnified by dissemination.

³⁸ For researchers who have been formed with an experimental approach that situation is at least irregular. Methodological quality and reasoning have lost value in favor of the quantity of information as well as the reproduction (rather than the renovation) of contents and approaches.

A theory should be defined as 'scientific' by its method, not by its content, not by its data-collection techniques and, much less, by the name of its authors or its widespread application. Present consensus definitions are essentially based on literature reviews as well as the number of publication of the authors involved. Unlike consensus, a proposal based on logical and mathematical principles is independent of prestige.

Since prestigious subjectivity is a more powerful subjectivity, the initial (well-intentioned) attempt to avoid psychological subjectivity turned out to be counterproductive: An incorrect epistemological structure is worldwide encouraged to be the same from the beginning to the end of the research so that the choices lean toward staying in the same conceptual system. Considering that without change there is no improvement, scientific knowledge is hindered.

In the 'consensus' articles it is usually written: a) the psychological diagnosis was made by some expert X according to the consensus definition Y,³⁹ b) the technique Z (which generally represents the originality of the research) was applied to the diagnosed groups, and c) the results are...

Since no demonstration is needed for the first step, neither expertise nor the consensus definition is empirically verified [4]. Regarding psychological diagnosis, the question that arises is the following: If it is true that all the corresponding psychological instruments have been applied for diagnosis; why their results are not (completely) shown?

Fortunately, the manifestations of psychological disorders are increasingly demanded to be more objectively proven. Such methodological demand is probably bringing about a little more frequent emergence of proposals aimed to renovate the consensus criteria. These proposals are refreshing since it is expected that literature reviews and, particularly, diagnosis guidelines change all the time according to the renewal of empirical findings. However, this change is very slow in view of the redundant framework on which the prevailing viewpoint rests. At present, and considering the new methodological demands, maybe the question expressed above has to be reformulated as follows: If the psychological results have to be shown; why the predetermined patterns of responses appear practically indistinguishable at the beginning and at the end of the research?

When reasoning is wrong it can be anticipated that the results will be wrong, but when most of the studies tend to confirm the consensus theory, something serious occurs, something that exceeds (or makes useless) scientific methodology and logics.⁴⁰

Nowadays, there are a lot of coincident reviews with 'undisputable' inferences where brain images are highlighted as a sort of (psychological) validation procedure in itself. It is quite the opposite view of the classical aphasia approach when the brain images were absent. Between both extremes of such an imaginary pendulum, the validity of psychological tasks and experimental designs remain obscure. In both extremes, psychological interpretations and preconceptions are dominant. Besides, scientific reviews seem to be captive of previous renowned findings. Although pioneering works and their authors are remarkable, that is not a

³⁹ If the theory is not valid, and the supposed expert is functional to the theory, then the expert can turn out to be inexpert for other theories. He/ she may not be able to see the variable categories and clusters of the other theories and, so, there may be (unintentional) bias due to such singular expertise.

⁴⁰ It can be useful to remember that expert-consensus overvaluation was one of the causes of the scientific impasse in the middle age. At the present time, and considering the problems generated by the globalization, Science must be more than ever independent of the Establishment. However, proposals and articles of renowned scientists and journals have now become synonymous with better and forced-to-be-quoted ones. They represent 'the' dissertations of reference.

reason for repeating them indefinitely. Moreover, if attention is not paid, this may be a way of getting stuck.

Even if dissent and the questions which cannot be answered by the present theory are the keys for generating scientific progress, they are usually avoided. On the contrary, there is a sort of constant search for consistency and widespread validation. Article reviews must look for similarities and differences but, for some reason, reviewers tend to seek similarities as much as possible.

Twenty five years ago Summers and Lederman [52] wrote something that is applicable to the present time and topic: 'Literature reviews... emphasize positive results, down-playing the null findings and extensive methodological inadequacies in the published...studies.'

Additionally, the link between psychosocial and biological sciences has created new challenges. For example, the direct transference from medicine to psychology of the methodological structure to construct nosologies has lead to considering psychological symptoms as if they were physical. But psychological symptoms need to be first translated to 'physical signs' (to put the expression in medical words) in order to be objectively assessed and then, secondarily, interpreted. Such translation is the operational definition. The association observed between a measure obtained with a biological technique and a measure obtained with a psychological technique is not equivalent to the translation of psychological symptoms or syndromes to observational 'signs'.

The ability to link psychological aspects with more organic (and supposedly more objective) substrates has produced a sort of euphoria that tend to obscure the fact that psychological aspects remain today as difficult to assess as throughout history. The validation of one psychological symptom is complicated, but the validation of several syndromes is much more complicated. Yet, the proposal of psychological syndromes is rife these days. The biologicistic trend is predisposed to believe that psychological events are quite 'freely negotiable', until a biological marker appears.

If the interaction between medical and psychological nosologies do not involve logical reasoning for deciphering the genesis and organizational structure of their concepts, including the basic distinction between the independent and dependent variables [4], the interdisciplinary efforts might enter into a speculative vortex similar to the observed in very ancient times or in the always present psychological pseudoscience.

Operationalization is part of the standard procedure to develop psychological studies and instruments. It is a useful step to deduce objective evaluations from concept/ consensus definitions; thus, it is a necessary step within each research which involves psychological assessment. Unlike the concept/ consensus definitions, which rely on authority, the validity of the psychological operational definitions does require empirical demonstration. However, with the advent of the clinical definitions by consensus (paradoxically presented as 'operationalizations') the specific study of the psychological assessment has lost status and high impact journals are not interested in psychometrics. On the contrary if a revolutionary neurobiological technique interacts with a psychological outcome, the research will be interesting, no matter the details of the psychological assessments, if they are shown at all.⁴¹

⁴¹ The confusion between the validation of the psychological assessments, on the one hand, and the validation of the study itself, on the other hand, also produces confusion among all the steps and procedures involved in the research. For example, if it is stated in the Methods, that the independent and dependent variables to be shown in the Results are highly correlated, the only step left for the rest of the research will be to describe the results of the already known correlation. It is very common these days that psychological assessments and their

Nevertheless, the neurobiological techniques also require validation and, curiously, such validation comes from psychology. Since the concurrent validity involves a two-way implication, the psychological validation is a necessary condition for demonstrating the neurobiological one.

A valid conceptual classification for aphasia symptoms and syndromes (or verbal functions and their organization), according to biological evidence, is necessary not only for discovering the dissociations and interactions among neuropsychological functions, but also for studying the consistency among different approaches, samples and instruments. This theoretical model should go beyond the novelty of the circumstantial instrument used for data collection, require deep methodological considerations and, if so, it will result in better research, therapeutic or preventive proposals. Neuropsychology has two parts. When article reviews are done, the psychological validity of tests and experimental designs has to be analyzed along with the neurobiological outcomes. If the consistency among neurobiological outcomes is based on doubtful psychological outcomes, the theoretical inferences will be doubtful.⁴² To be more specific, if the validity of the psychological outcomes is doubtful, any language neurobiological model will be doubtful.

A correct approach in the field of aphasia demands that the psychological symptoms and clusters of symptoms are defined in relative terms so that the interaction with lesions and clusters of lesions can be established by demonstration. Although there are some new attempts of modeling the relationship between brain and language, they mainly accentuate bibliographic and neurobiological consistency. I.e., psychological manifestations and interpretations can apparently remain open (or secondary) in view of the neurobiological evidences. Maybe for this reason the neurobiological evidences are so consistent while the psychological ones are not.

Psychometry helps to discover the validity of the instruments as well as the dissociations and interactions among psychological functions. In clinical settings, for example, if the consensus guidelines state that other cognitive disturbances have to be dissociated from aphasia, such dissociations have to be shown in the research. Beyond the guidelines, if a certain test is proposed to assess, e.g., grammatical- processing, and the test involves reading, the dissociation which demonstrates that grammatical- processing is independent of reading has to be shown.

The contribution of psychometrics to the neurosciences in general and to the aphasia theory improvement in particular has to be reconsidered. The feedback that exists between theory and instrument is best understood under this perspective. Although the instruments are based on the theory to prove their validity, they simultaneously serve to improve the validity of the theory. To avoid that this virtuous circle becomes a vicious one, all the steps of the scientific method has to be respected and dissociated from each other. As seen above, this objective is far from being achieved.

properties are *ad hoc* shown, wherever they become more convenient. Therefore, they can be at once the cause and the consequence.

⁴² Currently, most of the authors seem to share the approach which goes from psychology to neurobiology. Beyond the fact that, for aphasia (and by definition), the opposite direction should prevail, it would be interesting to see more frequently the exploration of the verbal-language functions as dependent variables: from neurobiology to psychology.

Considering aphasia diagnosis, only when the patterns have been consistently validated through different laboratories and approaches, they can be proposed as a theory. Otherwise it may be more useful to continue just with the symptoms.

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Chapter 87

ACQUIRED CHILDHOOD APHASIA: A MOSTLY UNKNOWN PHENOMENON

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ABSTRACT

Acquired Childhood Aphasia (ACA) is a medical phenomenon which is still mostly unknown and often disregarded. One reason for this disregard is the rarity of aphasia in children often being emphasized, and the prognosis being assumed to be more favorable for children and adolescents than for adults. Another common reason for the disregard is the lack of understanding the clinical picture of aphasia in children. The provided chapter offers a broad overview of possible definitions, symptoms, prognosis and outcomes of Acquired Childhood Aphasia and the impact on quality of life for the affected children and adolescents and their families. It goes on to show that the prognosis is not as favorable as often proclaimed, and impacts the affected children and their families in numerous ways. Finally, this chapter points out possibilities of therapeutic intervention and provides examples of measures of support for the families.

INTRODUCTION

There are numerous reports and research papers on aphasia, or at least on the variety affecting adults. Reports and papers on Acquired Childhood Aphasia (ACA), however, are still being marginalized. Globally speaking, there's the occasional research, notably stemming from Anglophone countries; compared to research papers on adult aphasia, however, are few and far between. This marginalization of ACA encompasses not only the fields of aphasiological research and education, but also the subsections of diagnostics and therapy. However, the last twenty years have shown discernible efforts to intensify research in this

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particular area of aphasiology. Various authors have repeatedly drawn attention to the lack of knowledge and research concerning the etiology and concepts of ACA diagnosis and therapy in recent decades. Presently, there's a discernible and increasing focus on ACAs acting as a spotlight on the phenomenon.

APHASIAS IN CHILDREN AND ADOLESCENTS - DEFINITIONS

A pervasive, yet not undisputed criterion for defining aphasia is the completion of language acquisition. However, aphasias are most definitely not limited to adults possessing a complete vocabulary. Damage to the brain, predominantly by way of traumatic brain injury (TBI), can lead to sudden-onset acquired aphasia in children and adolescents (cf. Leischner 1987, Rother 2005, Spencer 2006): "Like adults, children can exhibit language disorders from injury to the central nervous system after a period of normal development. Childhood-acquired language disorder, or childhood-acquired aphasia, refers to language impairment evident after a period of normal language acquisition that is precipitated by, or associated with, an identified form of brain insult." (Dennis 2010, p. 418). Dennis and Barnes (1990) state that head injury is the most common form of acquired brain damage in children and adolescents. Spencer (2006) regards TBI as the leading cause of acquired aphasias in childhood and adolescence, with a prevalence of 80% (cf. Hécaen 1983, Leischner 1987, Paquier/Van Dongen 1993). According to Siegmüller and Heide (2006), children suffer traumatic brain injuries primarily through vehicular accidents, through falling down whilst playing or doing sports or as a consequence of physical violence: "The neurobiology of childhood traumatic brain injury (TBI) includes immediate impact injury (contusions, diffuse axonal damage), secondary intracranial events (hematomas, brain swelling, infections, subarachnoid hemorrhages, hydrocephalus), and extracranial factors (hypoxia, hypotension). TBI results in focal brain damage (vascular injury involving contusions and hemorrhage, especially in the frontal and temporal lobes) and diffuse brain damage (to axons in the white matter), as well as in secondary damage such as raised intracranial pressure, hypoxia, and ischemia" (Dennis 2010, p. 418).

While strokes constitute the most common cause of aphasias in adult patients (in 80% of cases), resulting in unilateral focal lesions, children tend to present with diffuse, most commonly bilateral injuries affecting several cerebral areas to a variable extent. Granted, strokes can also occur in children, but this is among the rarely observed causes of ACA (cf. Spencer 2006).

ACAs show a marked difference in appearance, progression and pathogenetic conditions when compared to aphasias in adults (cf. Poeck/Hacke 2006, p. 102). Among the other possible causes of ACAs are brain tumors, degenerative diseases of the central nervous system, encephalitis and epilepsy (cf. Becker et al. 1986; Fabbro 2004).

Dennis and Barnes (1990) point out: "Recent studies of language in head-injured children and adolescents have concerned three issues: The rate of language recovery; the relationship to language deficits of factors like age, etiology, lesion size, and lesion site; and the form and range of the clinical language disturbances." (ibid. p. 429). If the cerebral language disorder's causes are pre- or perinatal, the affected children won't be able to complete a regular language development. These cases are not referred to as ACA. Some authors roughly

differentiate childhood language disorders as either ‘disorders of speech development’ or ‘ACAs’ (cf. Leischner 1987, p. 268; Rother 2005, p. 90). According to Leischner (1987), these can be further delineated: A disorder of speech development commences at a time when linguistic development has either not yet begun or has not yet been completed. ACA, in contrast, can be defined as the loss of an already acquired faculty of speech, analogous to adult aphasia (cf. Leischner 1987, p. 268). Therefore, only postnatal injuries can by definition be regarded as the cause of ACA (cf. Van Hout 1992; Rother 2005). To what extent aphasias can occur prior to the conclusion of linguistic development, however, is left ambiguous in Leischner’s delineation. In contrast, there are authors who choose to apply the term of ACA to impaired children who have not yet completed their language development (cf. Friederici 1984). This approach has asserted itself in recent years. In this regard, however, Rother (2005) as well as Leischner (1987) emphasize the necessity of aphasia being defined as the degeneration or loss of pre-existent faculties of speech (cf. Rother 2005, p. 91). Van Hout (1992) includes this facet in her by now generally accepted definition of ACA: “(1) An acquired lesion must have occurred after a lesion-free period, a free interval, and thus differs from the lack of language of congenital dysphasias in which the insult is pre- or perinatal; (2) Some normal language must already have been present, the accepted age-dependent boundary usually being 2 years of age, the time of the advent of the first sentences.” (ibid. p. 140). In practice, children are therefore regularly being diagnosed as aphasic even before the completion of language development. The linchpin of this definition is the proficiency in language production. Fabbro (2004) concurs with Van Hout’s definition and adds: „Acquired childhood aphasia refers to language deficits following brain lesions after the age of acquisition of the first sentences, generally after the age of 2.” (ibid. p. 1). This illustrates among other things a fundamental distinction in regards to disorders of speech development, seeing as childhood aphasias are the result of a distinct incident.

ACQUIRED CHILDHOOD APHASIA – NOT THAT COMMON?

Oftentimes, ACA is and has been labelled as a rare disorder. There exist no precise figures with regard to its prevalence and incidence. Guttmann (1942) however casts doubts on the relative rarity of the clinical picture, based on studies conducted more than 70 years ago: “[I]t is surprising that the rarity of aphasia in children is so often emphasized, and I think this can be accounted for only by lack of understanding of the clinical picture of aphasia in children” (ibid. p. 208). Compared to adult-centric aphasiology, Guttmann defines the problem of diagnosis thusly: „Aphasia in the adult is mostly diagnosed or sought for when the patient complains of difficulty in his speech – which children do not do – or if he uses wrong names for objects; in other words, apart from cases of complete motor aphasia, the early diagnosis of aphasia is commonly based on subjective or objective word-amnesia. The clinical appearance in children is different, and the signs of aphasia in a sick, apathetic, shy and often morose child are easily overlooked unless specially sought.” (ibid.).

Satz and Lewis (1993) share these doubts and point towards studies indicating a higher number of children exhibiting aphasic symptoms than commonly being estimated in professional circles. Grimm (2003) states as well that about 2% of children exhibiting language impairments should actually be regarded as ACA sufferers. Hécaen (1983) even

goes as far as to posit: „Aphasia is more frequent, at least among the youngest children, than in adults.” (ibid. p. 581).

In summary, concerning the evolution of aphasiology with regards to child-specific language impairments, the following can be ascertained: Starting with the earliest accounts of ACAs and up to the late 1970s, aphasiological research was concerned only with atypical manifestations of the clinical picture (cf. Guttmann 1942; Basser 1962; Alajouanine/Lhermitte 1965), or at least emphasized it in contrast to the heterogeneity of adult aphasia. Thus, ACA was primarily defined as nonfluent aphasia commonly occurring in confluence with lesions of the right hemisphere (cf. Paquier/Van Dongen 1998). On top of that, the notion of a swift and complete convalescence in ACA sufferers was purported for a long time (cf. Guttmann 1942; Basser 1962; Alajouanine/Lhermitte 1965; Lenneberg 1967; Hécœen 1976). Aphasia in adults and ACA were long distinguished by three main criteria: „(1) The children’s symptoms were said to be uniform and predominantly nonfluent, whatever the lesion localization; (2) Prognosis was assumed to be more favourable for children than for adults; (3) The frequency of right-hemisphere lesions was thought to be higher in children than in adults.” (Van Hout 1992, p. 139).

This perception of ACA has nonetheless shifted gradually since the late 1970s. Analogous to the research on aphasias in adults, there exist group studies (cf. Clarus 1874; Guttmann 1942; Alajouanine/Lhermitte 1965; etc.) as well as case studies (cf. Holland 1970; Lehecková 2004; Martins 2004 etc.). One singularly important medical innovation was the emergence of medical imaging, precipitating new insights regarding ACA. Employing computer-assisted tomography, Loonen and van Dongen (1990) determined the confinement of anomalies to the left hemisphere in the entire sample of aphasic children examined by them – a notion that had long been contested. Similarly, the techniques of PET, MRI and SPECT were more frequently employed over time (cf. Paquier/van Dongen 1998, Dennis 2010). Contrary to the established belief in the homogeneity of nonfluent ACA’s clinical picture, regardless of lesion location (cf. Guttmann 1942), these studies illustrate the correlation of lesions in various left-hemisphere regions with varying syndromes of aphasia (Paquier/van Dongen 1998).

SYMPTOMATOLOGY IN ACA

Dennis (2010) points out that children show a range of language disorders after acquired brain injuries and that language breakdown may occur at the level of pragmatics, semantics, syntax, morphology, phonology, or speech production. Thus, the clinical presentation of ACA affects all areas of language competence, just as it does with adult aphasia. In this context, it’s important to note that both forms of aphasia involve loss of language faculty and language comprehension based on cerebral organic causes, usually concomitant with retention of functionality in organs of speech, auditory perception and intelligence (cf. Kubandt 2009).

The traditional concept of ACA was primarily informed by the symptom of “nonfluency” as with Broca’s aphasia in adults (cf. Bernhardt 1885). This concept assigned five principal characteristic traits to ACA: Mutism, a period of hypospontaneity of speech, dysarthria, agrammatism and so-called “negative signs” (Van Hout 1992, p. 146). Negative signs, in this

case, are conceived as the absence of symptoms usually occurring in adult fluent aphasia, like jargon, logorrhea, paraphasia, neologism etc.

Traditional concepts regard **mutism** as one of the main symptoms of ACA. Branco-Lefèvre (1950) and Alajouanine and Lhermitte (1965) assumed a period of mutism ensuing immediately after the onset of an aphasic disorder. Likewise, Hécaen (1976) determined that such a period of mutism lasts far longer in ACA patients than it does in adults. He further stated a correlation between the type and location of cerebral injuries and the emergence of mutism. In this regard, von Cramon (1981) distinguishes between two different types of mutism: “true mutism” denotes the inability of expressing any sounds at all, while “word mutism” describes the inability of expressing oneself verbally resp. communicating (cf. *ibid.* p. 801ff). The term “aphasic mutism” is commonly used instead of “word mutism”, though it’s often difficult to distinguish from the so-called period of “**hypospontaneity of speech**” (cf. van Hout 1992, p. 146; Satz/Lewis 1993, p. 650f.), meaning a decrease in spontaneous speech, which often follows the period of mutism. This period usually lasts longer than mutism (cf. Satz/Lewis 1993). The symptomatology also encompasses a deficiency in initiating conversations. This phenomenon is rarely found in adult aphasic patients and is also considered as characteristic for ACA (cf. van Hout 1992). It is furthermore prevalent in young children. Van Hout and Seron (1983) regard the dysfunction of a speech “initiator” in connection with subcortical structures as the root cause of this symptom (*ibid.* p. 193). Spencer (2006) describes the decrease in spontaneous speech as a limitation and simplification of verbal behavior, as a depletion of vocabulary, as a reduced rate of speech and as a diminished mean length of utterances (MLU).

Deficiencies in the area of syntax have been an issue since ACA was first reported (cf. Bernhardt 1885) – however, there has not yet been enough research conducted in this field. Alajouanine and Lhermitte (1965) proceed on the assumption that syntax in aphasic children is characterized by simplification rather than deficiency, as is the case with aphasia in adults suffering from **agrammatism**. It is for this reason they state that “true agrammatism never occurs in children” (*ibid.* p. 658). Boehringer et al. (1979) too declared there to be no similarities to adult agrammatism. In contrast, Dennis (1980) assumes that agrammatism can very well occur in children and impair expressive as well as receptive capabilities. One problem in diagnosing agrammatism relates to the fact that due to mutism resp. reduction of spontaneous speech, the MLU in aphasic children often turns out to be rather sparse. This in turn exacerbates the effort of drawing conclusions with regards to syntactic abilities. On a lexical level, ACA sufferers display conspicuous problems in naming things (cf. Satz/Lewis 1993). In his 1983 studies, Hécaen observed lasting “naming disorders” in 44% of ACA cases with left-hemisphere lesions (cf. *ibid.* p. 58ff). Cases like this are commonly referred to as **anomies** (cf. Van Hout 1992; Satz/Lewis 1993). Moreover, the following is held to be true with regards to ACA-induced lexical disorders: “Lexical problems have been described as true anomia, reduced with the help of phonemic cues, or as a loss or poverty of vocabulary, more similar to a reduction of use or an impoverishment of the memory stock.” (Van Hout 1991, p. 118).

Concerning the existence of paraphasias, professional opinions differ. As well as disputing the existence of childhood agrammatism, Alajouanine and Lhermitte (1965) also deny the occurrence of paraphasias with regards to ACA, or at least emphasize its scarcity (cf. *ibid.* p. 658). Hécaen (1976) aligns himself with this notion. More recent studies however produce arguments for the existence of paraphasias (cf. Van Hout et al. 1985; Visch-

Brink/Van de Sandt-Koenderman 1984; Van Dongen/Visch-Brink 1988). They offer a possible explanation for the counterargument of scarcity by pointing out that paraphasias in conjunction with ACA mostly occur over only a short period of time and thus are more likely to be overlooked (cf. Satz/Lewis 1993). According to Aram (1991), paraphasias are much more likely to emerge in acute phases, but might also persist over a longer period of time. Spencer (2006) as well assumes that semantic and phonemic paraphasias present themselves primarily in the first few months following a child's impairment. Dennis and Barnes (1990) have shown that children with TBI have deficits in comprehension of mental state verbs as well. As mentioned earlier, traditional doctrine regarding ACA presupposed the existence of so-called "**negative signs**" until the end of the 1970s. The notion of these "negative signs", encompassing for example mutism, dysarthria, telegram style and a reduced length of sentences, led to a characterization of ACA as predominantly "non-fluent" (cf. Fabbro 2004). Guttmann (1942), Alajouanine and Lhermitte (1965) as well as Hécaen (1976) even assumed a complete absence of fluent aphasia in children. This traditional concept, however, has been amended by several studies conducted in recent years. In this context, Aram (1991) drew attention to the dearth of crucial information with regards to the language of aphasic children: "Very little systematic investigation of phonology or articulation has been pursued among children with acquired aphasia; the data are not available to generalize as to conditions that may relate to the presence or absence of phonological and/or articulatory problems." (ibid. p. 437).

Hécaen (1976) refers to impairments of **written language** as frequently occurring in ACA sufferers. According to Alajouanine and Lhermitte (1965), disorders of written language acquisition are generally encountered in the context of ACA and more prevalent than linguistic disorders. All three authors point out that ACA in conjunction with written language is far more likely to affect writing disorders than impairments in reading proficiency (cf. Alajouanine/Lhermitte 1965; Hécaen 1976). Spencer (2006) describes it as the worst possible partial prognosis, taking into consideration that reading and writing are the last acquired modalities of language acquisition. In this context however, Aram (1991) criticizes the lack of detailed reports and studies regarding written language proficiency in afflicted children. Even if it is less impaired than written language proficiency, reading proficiency is often significantly more dysfunctional than spoken language. On the other hand, Dennis (1980) was able to show by means of a study that while reading proficiency was much more impaired than language proficiency during the acute phase of affliction, those circumstances underwent a reversal over the course of three months. One has to bear in mind though that, according to Rother (2005), in the context of writing and reading dysfunctions are particularly noticeable if these skills were already acquired premorbidly (cf. ibid. p. 52). Some studies however show that children who have acquired aphasia at a pre-school age are faced with significant issues, meaning they either won't be able to learn how to read and write or merely on a very limited level (cf. Gloning/Hift 1979). In general, a correlation between the severity of written language impairment and the age of the afflicted children is hypothesized (cf. Rupp 2006). Thus, Hécaen (1976) observed deficiencies of written language in 90% of under-10-year-olds vs. only 45% of over-10-year-olds. Since younger children are still in the process of learning written language, they often display more severe difficulties. Aram (1991) too emphasizes how skills that have yet to be acquired are more susceptible to dysfunctions than those premorbidly existent. These cases are further aggravated by the difficulties in performing a differential diagnosis between aphasia and dyslexia, especially if the aphasia

hasn't been recognized as such and the corresponding symptoms only appear years after the acquired cerebral impairment. All told, what can be established is that recent studies indicate a variety of different reading and writing dysfunctions as possible effects of ACA, comparable to those experienced by adult acquired aphasia sufferers (cf. Loew/Böhringer 2002, p. 23).

Utilizing new techniques and improving upon existing neurolinguistic testing procedures, it has now become possible to examine highly diverse aspects of language more accurately. Procedures such as these made it feasible to establish "**positive symptoms**", like **logorrhea**, **paraphasias**, **perseverations** and **neologisms**, alongside the previously mentioned negative symptoms (cf. Fabbro 2004; Lehecková 2004; Paquier et al. 2004): "Recent case studies show a great variety of aphasic symptomatologies including auditory comprehension disorders, paraphasias, neologisms, logorrhea, jargon, impaired repetition abilities, and a host of linguistic deficits in reading and writing." (Paquier/van Dongen 1996, p. 428).

Thus, nowadays it has become basically assumed that all symptoms occurring in adults might also be found in children (cf. Van Hout/Evrard/Lyon 1985; Martins/Ferro 1991; Fabbro 2004; Lehecková 2004; Paquier et al. 2004; Rother 2005).

Compared to the vigorous efforts in classifying the various aphasic dysfunctions in adults however, there have been markedly fewer corresponding attempts with regards to ACA. Aside from classification in terms of etiology, lesion locus and manner of spontaneous language, ACA used to always be described and categorized via its symptoms (cf. among others Van Hout 1992): "The aphasic symptoms in children are not as differentiated with respect to location as in the adult." (Tartter 1998 p. 223; also cf. Goodglass 1980). One of the most current works on ACA, "Neurogenic Language Disorders in Children" (2004), edited by Franco Fabbro, nonetheless asserts that all adult-specific aphasic syndromes can also occur in children: "Moreover, these symptoms correlate with clinical aphasic profiles and lesion localizations similar to those of adults. Indeed, at least in their acute phase and lesional phase aphasic syndromes in children have been found similar to most of the aphasic syndromes in adults." (Fabbro 2004, p. 2). Likewise, Van Hout (1992) and Van Dongen et al. (2001) refer to the "existence of an adult-like heterogeneity of childhood aphasic syndromes." (ibid. p. 345). In this regard however, Van Hout (1992, 1993) points out that although aphasic symptoms in children have been found to be similar to those of adults, children may show atypical symptoms. Among professionals, this is considered status quo as far as the symptoms of ACA are concerned.

SYMPTOMS ASSOCIATED WITH ACA

Aside from aphasia, several other attendant symptoms may occur, among them for example hemiplegia, epilepsies, dysphagia and disorders of concentration, attention and memory (cf. Franke 2004). Hécaen (1976) and Leischner (1987) for example observed a high number of hemipareses in aphasic children. According to Spencer (2006), damage to the frontal lobe as a common result of traumatic brain injury can lead to attention disorders and disorders of the working memory in aphasic children, as the frontal lobe is host to these neuropsychological functions. In the context of ACA, Miller et al. (1984) address other characteristic traits not directly attributable to the aphasia. They determined that ACA often

goes hand in hand with comprehension issues and note, among other things, that afflicted children oftentimes appear deaf-like and also act accordingly. Guttmann (1942) and Agranowitz/McKeown (1975) have also drawn attention to this particular aspect of ACA. Rothenberger (1986) observes that cognitive, motoric and emotional issues are possible byproducts of aphasia. Sollee and Kindlon (1987) see a correlation between cerebral lesions and behavioral problems in children, thereby corroborating studies conducted by Herzberg and Herzberg (1977). Campbell and Heaton (1978) too refer to behavioral disorders. To them, this includes diminished attention, aggression, temporary outbursts and, in some cases, hyperactivity. Agranowitz and McKeown (1975) also describe these phenomena and state: "Behavior problems play an important part in the diagnosis of aphasic children." (*ibid.* p. 192). Dennis and Levin (2004) discuss the behavioral outcome after TBI too. Mantovani and Landau (1980) suspect that behavioral disorders in connection with ACA "may reflect a primary disinhibition at limbic or diencephalic levels." (*ibid.* p. 528). In contrast, Miller et al. (1984) would sooner ascribe the behavioral problems to the sudden loss of speech and look towards psychological reasons as root causes. The studies of Campbell and Heaton (1978) also speak for the validity of the latter explanation. Their thesis is based on the observation that behavioral disorders tend to disappear once the afflicted children are presented with alternative systems of communication.

Furthermore, a syndrome often mentioned in context of ACA is the so called Landau-Kleffner-Syndrom. Bishop (1985) describes it as a "syndrome of acquired aphasia with convulsive disorder, in which language regresses after a period of normal development and seizure develop" (*ibid.* p. 705).

PROGRESSION, PROGNOSIS AND OUTCOME

Dennis and Barnes (1990) state that "the bases for language symptom patterns and recovery rates in children and adolescents with acquired lesions are poorly understood" (*ibid.* p. 429). Concerning recovery and linguistic capabilities of ACA sufferers, a marked variance in prognosis and progression is held to be true. The primary factors being recognized in connection with recovery are type of injury and age of the child at the lesion's onset (*cf.* Aram 1991). Progression of ACA has almost exclusively been characterized in relation to the question of prognosis. Despite numerous studies, the long-term development of ACA still remains ambiguous (*cf.* Miller et al. 1984). The traditional view of ACA proceeded from the assumption of an excellent prognosis, especially when compared to adult aphasia (*cf.* Clarus 1874; Bernhardt 1885; Freud 1897). This traditional notion endured over the course of the 20th century (*cf.* Guttmann 1942; Alajouanine/Lhermitte 1965; Lenneberg 1972; Hécaen 1976). The researchers arrived at this conclusion by way of the long-held assumption that aphasic symptoms in children were merely temporary and rarely persistent. In his study, Guttmann (1942) recounts astonishingly positive prognoses in some cases: "The recovery from aphasia of the purely motor type is surprisingly rapid, and most cases with a reversible lesion have recovered within four weeks." (*ibid.* p. 218).

More recent papers and studies on the topic contradict this hypothesis at least to some extent. For example, Satz and Bullard-Bates (1981) analyzed data on ACA that had been published up to 1978 and pointed out that 25 to 50% of cases were still suffering from aphasia

a year after onset of the disorder. Loonen and Van Dongen (1990) observed comparable cases: "Most of the children had not recovered completely 1 year after onset." (ibid. p. 1324). Jordan and Murdoch (1994) examined a number of adults who had suffered severe head injuries during childhood and reached a similar conclusion: "Results indicated that all areas of language competence assessed (syntax, semantics, and pragmatics) appeared to be compromised by the childhood closed-head injury." (ibid. p. 506). Two years later, Jordan and Ashton (1996) published a similar study with a subject group comprised of children and arrived at the same results.

One possible explanation for these recent insights and notions may well be that earlier studies had either neglected to account for variables that could possibly affect the prognosis or had merely considered them in a fleeting manner. Van Hout (1991) criticizes the long-held belief of age being the main criterion for a good prognosis. She counts etiology, age at the time of onset, lesion scale and types of aphasia among the variables far more important for arriving at a prognosis. The differing etiologies of ACA render it nigh impossible to reach a universally valid assessment. The factor of differing etiologies being mostly disregarded might be explained by the long-held notion of childhood aphasia as relatively homogeneous phenomena. Van Dongen and Loonen (1977) were among the first to ascribe vital importance to etiology with regards to prognosis. Among other things, they reached the conclusion that ACAs stemming from cerebral traumata will often recover completely (cf. ibid. p. 135f). Moreover, they argued in favor of the prognosis of traumatically induced aphasia being much better than of those stemming from inflammatory processes. Niedergall and Renschmidt (1981) share this opinion. Dennis and Barnes (1990) state that "recovery of speech and language in instances of childhood head trauma is overall better than recovery from some other acquired conditions of childhood" (ibid. p. 429). Martins and Ferro (1991) however arrive at this conclusion: "[The] children with stroke had a very good recovery compared to those with traumata and especially the infectious cases." (ibid. p. 179). Dennis and Barnes (1990) conclude that "not all clinical language functions return after head injury. And even after clinical recovery of language, the question remains how effectively the individual can use language for social and interpersonal communication, a question that concerns not clinical language functions (naming, repetition, fluency, and the like), but discourse." (ibid. p. 429). A different case study of Martins (2004) based on fifty ACA patients indicates that in 11 cases, the patients were still suffering from chronic aphasia two years later. She thus concludes that it's not factors like age or gender that are of relevancy to the recovery process, but rather factors related to the scale and location of the lesion. One difference between ACA and aphasia in adults is the time of improvement, according to Martins: "Curves of aphasia recovery in adults (again, mostly stroke patients) have shown that the greatest improvement is seen in the first 3 months (especially in the first three weeks)... There may be some recovery during the first year..., but afterwards there are no significant changes, and functional decline has occasionally been reported... Although children who recovered did so during the first year, in our group of chronic aphasia improvement of different language abilities was found not only after the first year, but also 5 or more years after lesion onset, causing changes in the aphasic profile and taxonomic diagnosis." (ibid. p. 245). According to Martins, another fundamental difference with regards to adult aphasia's recovery lies in the fact that with children, language performances were far more likely to improve even in the chronic period: "Regarding recovery, there are two main differences between these findings and findings related to adult aphasia. First, unlike adults,

the overall recovery was better in children and, secondly, children improved in the chronic period.” (ibid. p. 245). Martins argues in favor of a better prognosis for ACA versus adult aphasia in general, yet criticizes the lack of knowledge regarding cases of chronic aphasia. Lehecková (2004) arrives at a similar conclusion. By contrasting the recovery of a Czech child suffering from aphasia with that of an adult aphasia patient, she reasons thusly: “The child’s aphasia is basically manifested in the same way as the adult’s aphasia with one exception: while the adult patient two years post-onset reached a stage after which her language skills no longer improved, the child has continued to develop her linguistic abilities.” (ibid. p. 227f).

All told, it is notable that ACA prognosis is not regarded as positively today as it once was, especially compared to adult aphasia. Factors like age and gender have taken a backseat to etiological factors.

Nevertheless, more recent studies demonstrate that even with existing resp. chronic aphasia, there is still the possibility of successful recoveries, especially in children. A number of authors attribute this fact to the brain’s plasticity during childhood (cf. Becker et al. 1986; Loew/Böhringer 2002, Fabbro 2004). Even in this context however, the prognosis is not estimated as positively anymore as traditional notions once held (cf. Kubandt/Friede 2011).

In this context, one aspect that is left unconsidered by ACA research is the fact that in some cases, aphasic symptoms can still emerge long after the acute event and subsequently remain unrecognized. This could possibly be one cause of childhood and adolescence aphasia not being diagnosed (cf. Kubandt 2008a, 2009). Benz and Ritz (2003) thus call attention to the no longer applicable traditional adage positing that, due to the brain’s plasticity, the long-term effects of TBI are significantly more favorable the younger a child is at the time of the accident. The authors argue that children actually tend to grow into their permanent deficit. Another aspect to consider with the so called phenomenon of ‘growing into deficit’ is the fact that afflicted children often experience retardation of further development. This results in a progressive ability gap when compared to their peers, one that subsists even in the face of continuous development. The issue has long been neglected and disregarded. In this context, the prognosis for ACA sufferers is negative insofar, as the afflicted need to both reacquire the abilities they have lost due to cerebral injuries as well as develop additional abilities to advance their overall progress. This in turn necessitates repeated examinations to supervise further progression following the accident or onset of disease (cf. Kubandt 2009).

All in all, and analogous to adult aphasia, ACA is not without consequences. Aside from the symptomatic impairments already mentioned, there are also **psycho-social consequences** to contend with. Unfortunately, this is another area that has so far been rather neglected by ACA research (cf. Kubandt 2008a). This leads Martins (2004) to emphasize the negative consequences of ACA in spite of its overall supposedly better prognosis compared to adult aphasia: “Although chronic aphasia tends to have mild forms of aphasia and their linguistic abilities may continue to improve in the chronic stage, persistent aphasia has a negative impact on their educational, social and professional life.” (ibid. p. 247). The three mentioned aspects also play a vital part in the context of therapeutic interventions.

To summarize the phenomenon of ACA it can be referred to a definition by Brown and Hécaen (1976):

“1. Acquired childhood aphasia is characterized by mutism or agrammatism at an early age, and by anomia and nonfluent phonemic paraphasias somewhat later. 2. Articulatory

disorders in acquired childhood aphasia appear in the context of a nonfluent or borderline fluent state. 3. The picture of fluent phonemic paraphasias in conversation (conduction aphasia) is rarely encountered. 4. Logorrhea and semantic or neologistic jargon do not occur in acquired childhood aphasia. 5. Disorders of comprehension are present in about one-third of the patients, but the adult-type correspondence between comprehension loss and logorrheic jargon is not found. 6. Recovery tends to be superior to recovery in adult aphasia. 7. At any early age, there is a relatively even chance that aphasia will occur with injury to either hemisphere.” (ibid. p. 189).

PROSPECTS OF INTERVENTION REGARDING ACA

The area of clinical intervention is highly significant to people suffering from aphasia as well as their family members. There exists a wealth of research regarding diagnostics and therapy for adult aphasics. Just as in all other respects, aphasiology targeted towards children has, however, taken a clear backseat to adult-specific aphasiology. Instead, diagnostic and therapeutic tools designed with adults in mind are also employed with ACA, without ever having been empirically proven as beneficial (cf. Kubandt/Friede 2011). Within the fields of diagnostics and therapy, two main trends are predominant: Cognitive neurolinguistic on the one hand, offering a possible foundation for precisely structured and scientifically valid diagnostics and therapy; and, on the other hand, a pragmatic-communicative approach mainly allowing for diagnostic as well as therapeutic procedures in the context of communicative agency and daily routine (cf. Kubandt 2008a). Even today, literature on ACA very rarely references diagnostics and therapy. Seeking a similar range of diagnostic options and techniques as is typically on offer for adult aphasias proves to be a fruitless endeavor.

DIAGNOSTICS

Guttmann (1942) was among the first researchers to draw attention to the inherent difficulty in diagnosing ACA. Numerous cases remain undetected, which Guttmann regards as a reason for the general assumption of low prevalence. His definition of ACA posits the disease not as a rare occurrence, but rather as a seldom recognized clinical picture. Agranowitz and McKeown (1975) characterize these undiagnosed childhood aphasias as the single most serious issue for those persons affected by them.

Diagnostics in general aim to obtain as comprehensive an impression as possible of a child’s linguistic abilities to use as a springboard for further therapeutic steps. This includes assessment of the pre-morbidly achieved level of speech (cf. Loew/Böhringer 2002, p. 29). On one hand, this assessment is necessary in children with acquired cerebral injuries in order to differentiate between a language impairment and ACA; on the other hand, it offers hints as to therapeutic strategies and their objectives. Furthermore, the pre-morbid level of speech (among other factors) can also offer indications concerning progression and prognosis. However, Becker, Bergmann and Kubiak (1986) emphasize that aphasic impairment may well be the most prominent symptom in children and adolescents, but hardly the only one. The cerebral injury negatively impacts the child’s entire personality (ibid. p. 59). It is for this

reason they call for examinations to assess a child's entire personality instead of merely cataloguing its linguistic abnormalities.

Practice has proved the usefulness of gathering essential information regarding the pre-morbid level of speech by way of initiating a dialogue with the parents and having them fill out questionnaires, as well as gaining access to school reports (cf. Kubandt 2008b). The checklist of diagnostics developed by Bulling, Geigenberger and Hofman (2002) can serve as one possible example of such a questionnaire. In it, questions regarding manners of speech and communication both pre- and post-onset are posed. In order to examine motor speech, screenings for apraxia of speech and dysarthria may be employed (cf. Loew/Böhringer 2002; Spencer 2006). Yet another aim of diagnostics is assessing the progression of the disease. Findings and information supplied by prior attending facilities and specialists, like rehab clinics, schools, physicians, neurologists and speech therapists for example, as well as statements from relatives, allow for more specific diagnostics. Information such as this is especially vital in diagnosing illusory recovered aphasias (cf. Chilosi et al. 2008). Beyond that, Loew and Böhringer (2002) regard the assessment of a child's current need for communication as an important diagnostic goal. Yet another aspect figuring into the issue of diagnostics is the assessment of other neuropsychological abilities - attentiveness and perceptiveness, for example. Becker, Bergmann and Kubiak (1986) point to the importance of not merely using the diagnosis to assess the impaired abilities and performances of the afflicted children, but above all those a child is still in possession of, since these serve as a gateway to rehabilitation (ibid. p. 59).

THERAPY IN APHASIC CHILDREN

With regards to therapy in aphasic children, there is much research still to be done, especially in direct comparison to the wealth of available therapeutic approaches and techniques for adult aphasia (cf. Kubandt 2009). Becker et al. (1986) cite rehabilitation of the linguistic abilities possessed by the child pre-insult as an integral task of therapy, as well as the acquisition of new linguistic skills (like written language skills, for example), since the latter usually poses considerable difficulties to the afflicted children (ibid. p. 63). They denote the exceptionality of ACA therapy vs. therapy for adult aphasia thusly: the conjunction of practices acting towards the recovery and acquisition of linguistic skills during an individually aggravated learning process (ibid.). Eisenson and Ingram (1972) consider it of vital importance to diagnostically assess a child's pre-morbid level of linguistic development before the start of therapy, the former serving as a starting point for the latter. Therein lies a fundamental difference to rehabilitation in adults: While adult aphasia patients' therapy is geared mainly towards recovery of pre-existing skills, children are obligated to undergo further development in all respects, be it motorically, linguistically, socially or cognitively. Thus, it is not enough to merely relearn pre-morbidly existent skills. Consequently, the focal point of rehabilitation, in addition to the *reclamation* of pre-existent skills, is stimulating a child's capacity *to learn something new*. Both of these aspects are of central importance in ACA therapy and should be borne in mind.

WORK WITH PARENTS

Relatives should receive information about the clinical picture of aphasia and act as significant support systems during therapy (cf. Becker et al. 1986; Spencer 2006): “Parents of the aphasic child are usually confused and baffled by the many problems confronting them.” (Agranowitz/McKeown 1975, p. 196). This has the effect of further elevating the importance of working with parents in the context of therapy – not only to assist affected parents and siblings, but also the afflicted children themselves. Especially where aftereffects, like for example behavioral disorders, are concerned, educating parents resp. relatives becomes a substantial aspect of therapy: “The parents need to understand the basis of their child’s behavior. Most of the symptoms are directly related to the brain injury and must be understood as part of the picture of the aphasic child.” (Agranowitz/McKeown 1975, p. 197). There should be parent counseling with regards to possibilities of the child’s reintegration at school and the most advantageous course of education (cf. Kubandt 2008a, Kubandt 2009). Therefore, working with parents is regarded as a central aspect of the therapeutic process by all the authors. In this respect, Becker et al. (1986) consider both one-on-one conversations and parent group discussions as useful tools to be employed regularly in addition to a child’s therapy. Agranowitz and McKeown (1975) recommend parent groups as a medium of reciprocal communication and support. Roberts (1966) likewise regards working with parents a fundamental pillar of therapy. Hahn et al. (2002) too conducted regular meetings with parents during the course of therapy in order to provide transparency and point out support options to them. They consider it just as relevant to create a setting for potential questions and issues on the parents’ part and stressed the need to impart advice for dealing with a speech-impaired child (ibid. p. 50). The aims of meeting with parents outlined above are generally acknowledged as being sensible and should be considered for comprehensive use in therapy.

SCHOOL REINTEGRATION OF APHASIC CHILDREN AND ADOLESCENTS

A general question within the context of young patients’ aphasia therapy is the one concerning their continued school career. The ICF’s conception of target objectives in particular places the individual in its entirety in the centre of the rehabilitative process and regards scholastic and occupational rehabilitation as worthy goals in addition to medical rehabilitation. Becker et al. (1986) therefore recommend a therapeutic course of action within small groups of children, regarding it as preparation for an eventual rehabilitation of the aphasic child into the school system. Roberts (1966) and Haynes (1986) also recommend group-centric therapeutic measures.

The question of further scholastic development is of vital importance with regards to ACA, yet still remains sparsely researched (cf. Kubandt 2009), just like every other field of child-oriented aphasiology. Agranowitz and McKeown (1975) are among the few to have focused on this subject. They note that school should be adjusted towards the children’s needs: “the aphasic child learns better in a situation with minimal stimulation.” (ibid. p. 194). Another of the few publications on this topic originates from Girolami-Boulinier (1986) and addresses the scholastic development of children and adolescents in the Paris area. However, Girolami-Boulinier himself notes that this should by no means be considered a representative

study. Its results are as follows: From the perspective of school education, a return to the past school system route is important (with or without delay). If an adolescent has not reacquired this former level after 1.5 to 2 years, it becomes necessary to detect possibilities of directing him towards an apprenticeship that actually corresponds with his interests, so his acquired skills won't deteriorate anew (ibid. p. 85). Admittedly, reintegration into regular school is often impossible since overly large grades and time pressure due to curricula do not allow for catering to the individual needs of impaired children. Hofmann Stocker (1991) determined by way of a study that of 23 adolescents suffering from aphasia, only half were able to resume their education. It is for this reason Birkenbeil (1995), in marked contrast to Girolami-Boulinier (1986), calls for specially tailored types of schools. In general, the question of school rehabilitation still remains insufficiently researched, with many problems left unsolved and many questions unanswered (cf. Kubandt 2008b, Kubandt 2009).

CONCLUSION

Regarding the field of aphasia research in the context of ACA, there's an evident future need for increased attention and efforts. A pivotal research gap concerns the field of diagnostics and therapeutic studies. The necessity of speech therapy is undisputed, yet there are no particular standardized testing procedures and therapy programs available, creating a rather significant need for further research. A particular problem in this regard is posed by issues of quality assurance, efficiency and effectiveness of diagnostics and therapy. At the present time, both diagnostics and therapy run the risk of arbitrariness. Means of interventions regarding ACA that are based on adult aphasiology pose the danger of outdated and heavily criticized approaches and materials being adopted for the purpose of children- and adolescent-oriented intervention, unreflecting and without regard for the criticisms voiced by researchers. At a time evidence-based rehabilitation is at the centre of debates, this seems problematic and academically untenable.

Regarding the demonstrated particularities of prognosticating ACA, the ultimate conclusion is to commence with the rehabilitation process of aphasic children and adolescents as soon as possible (i.e., directly following the acute clinical treatment) and to allow for a sufficient period of time. Furthermore, the process should be comprehensive, including medical measures as well as those with the purpose of scholastic, occupational and psychosocial rehabilitation.

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Chapter 88

APHASIA IN CHILDREN AND ITS IMPACT ON QUALITY OF LIFE

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ABSTRACT

People who develop aphasia must adjust their lifestyle and learn to cope with the activity limitations that result from their disability. Aphasia can profoundly affect a person's capacity for academic achievement as well as their occupational competency, social participation, and ability to manage finances. This is especially true for young people, who have yet to fully learn how to participate as a member of society. Young people who acquire aphasia are likely to have a poor record at school and have difficulties completing higher education and getting a job. They also might be unable to pass a written test for a driver's license. Young people with aphasia who wish to contribute to the community and be engaged in social activities might not achieve these goals and might feel isolated. In the worst case, they might shut other people out of their lives and withdraw from society. In this chapter, we describe the long-term prognosis of three individuals who became aphasic in their childhood or youth and discuss how young people with aphasia can best be rehabilitated.

1. INTRODUCTION

The first verse in the Gospel of John reads, "In the beginning was the Word, and the Word was with God, and the Word was God." It is quite difficult to live without the Word. Language ability is usually taken for granted—until it is lost. Brain damage can cause aphasia and affect a wide range of language abilities including the understanding of speech, talking, reading, and writing. One can have an experience close to aphasia when visiting a foreign country where one is unable to understand others' language and unable to converse with

others. However, aphasia differs from this scenario because a person with aphasia also experiences difficulty in thinking in their own language.

Aphasia can result from any type of brain damage, including stroke, traumatic brain injury, brain tumor, and infection. Approximately 30% of first-ever ischemic stroke survivors have aphasia (Engelter et al., 2006). For the person with aphasia, sudden changes in language processing immediately impact daily communication and change the nature of communicative exchanges and the quality of interactions. Although people with aphasia want to function as they have in the past, they often are unable to work and are confronted with an enormous challenge to fulfill their roles in daily living—for example as a partner, parent, or friend. Some might even develop depression (Astrome et al., 1993), which often is related to loneliness, isolation, low self-esteem, and the inability to accept themselves as a handicapped person.

Although aphasia occurs most commonly in the latter half of life, some individuals may acquire aphasia in childhood. In these cases, aphasia greatly affects the whole life.

Despite the challenges that they face, people with aphasia generally wish to be engaged, involved, and respected, to take part in the community, to be cognizant of current events, to do things with others without being a burden, to contribute to the community, and to generally carry out a daily routine. In this chapter, we describe three young people with aphasia and review the impact of aphasia on these individuals. We also discuss how to rehabilitate children with aphasia.

2. CASE PRESENTATION

Case Presentation 1

Case 1 was a 17-year-old high school student when he experienced a brain hemorrhage attributable to arteriovenous malformation. He was admitted to a hospital in his town with disturbance of consciousness. Computed tomography revealed the location of the lesion in the left temporal lobe which covered Wernicke's area and its underlying white matter, the arcuate fasciculus, which both play a critical role in linguistic functions. Surgical resection improved the disturbance of consciousness, but aphasia remained.

The aphasia was classified moderate-severity Wernicke's aphasia with poor auditory processing, fluent speech, and poor repetition. Owing to poor auditory processing, the patient had difficulty understanding others' speech. Although he spoke fluently in sentences, the content of those sentences sometimes contained verbal paraphasias as well as phonological paraphasias. Repetition was limited to a few phrases. An intensive aphasia treatment program was provided in the hospital, and the Wernicke's aphasia improved to some extent. After treatment, however, the patient still had difficulties understanding long sentences, talking, sending text messages, and learning. In contrast, he had relatively intact nonlinguistic cognitive skills, such as memory and visuospatial function.

Prior to his hemorrhage, the patient had an average school record and was a polite and friendly young man. However, he could no longer participate in the things he enjoyed such as studying at school, talking with friends, and sending text messages to friends. He was unable to pass a written driver's test and therefore could not obtain a driver's license. He gradually

began to lose contact with friends and spent more time indoors enjoying computer games or reading cartoons. After graduating high school, even though he tried to work in several factories, he quit each job after a short time because he was not able to communicate well with others. He could not fully manage his finances. At 9 years post-onset, case 1 has become socially isolated.

Case Presentation 2

Case 2 was an 18-year-old high school student when he was riding his bicycle home from school and was struck by a truck. In the hospital, he was in a deep coma (Glasgow Coma Scale score 5; E1V1M3). He was intubated and mechanically ventilated. Brain computed tomography revealed left fronto-temporo-parietal hemorrhagic contusions with midline shift, which required hematoma resection as well as internal and external decompression. After 10 weeks, the patient regained consciousness and participated in neurologic rehabilitation therapy. After 6 months of therapy, he was discharged with right complete hemiparesis, total aphasia, severe apathy, and attentional dysfunction. His follow-up computed tomography at 1-year post-onset revealed brain damage that covered almost all of the left hemisphere.

The patient had global aphasia, presenting with impairment of all productive and receptive linguistic functions, which was resistant to intensive speech therapy provided in the hospital. He was unable to produce any spontaneous speech. Repetition was also totally impaired in that he could not repeat even one word. Comprehension was poor even on a word level, and he was unable to understand sentences. Comprehension of written language was also severely impaired. Communication was partly possible with the aid of non-verbal gestures. He was totally unable to manage his finances.

In summary, the communication capabilities of case 2 were extremely poor and were limited to very simple words and non-verbal gestures. The patient dropped out of high school and could not get a driver's license. He was incapable of meaningful social engagement and thus gradually lost contact with friends and often stayed indoors. Seizure control was difficult, and in the 10 years following the injury the patient had to be hospitalized several times owing to status epilepticus. At 10 years post-onset, the patient's activities were limited to going to rehabilitation four times per week for physical and linguistic improvement.

Case Presentation 3

Case 3 was a 13-year-old junior high school student when he fell from a height of 6 meters. He was in a deep coma when he arrived at the emergency department of our hospital. His traumatic brain injuries required internal and external decompression. His coma subsided, and he was discharged at 6 months post-onset. Follow-up computed tomography performed at 1-year post-onset showed damage of the left temporo-parietal cortices and the right temporal pole.

The patient had moderate-severity Wernicke's aphasia. He also presented with attentional dysfunction and executive dysfunction. Although he returned to school at 1-year post-onset, his performance was substantially poorer than his pre-accident level. He could not fully understand what his teachers were saying. His ability to perform mathematical calculations

was severely compromised, and he was no longer able to perform simple additions of one figure that included carrying. He could not write some Kanji characters (Chinese characters) that are taught in the lower grades of primary school. He moved from a regular class into a special education class for handicapped children. After graduating junior high school, he entered a special support school for handicapped children where he was taught manufacturing technology, and he now hopes to get a job in a small workshop. He is unlikely to obtain driver's license because of his aphasia and attentional dysfunction.

Summary of the Three Young People with Aphasia

All three cases experienced problems with learning, vocation, driving, social communication, and making friends. Participating in society and making an optimal choice regarding vocation were the most substantive challenges during their rehabilitation.

3. IMPACT OF APHASIA ON DAILY LIVING

Aphasia negatively affects a wide range of activities, including classroom participation, vocation, driving, social participation, and managing finances.

A. Classroom Participation

As exemplified in the case presentations above, when children with aphasia return to school, they find it difficult to learn because, for almost all subjects, learning requires linguistic abilities. Children with aphasia achieve much less than expected, and their record at school is poor relative to pre-aphasia levels.

Very often, the problems observed in the classroom setting also include difficulties with interpersonal relationships. Those patients who are overly sensitive may interpret pressure, teasing, or joking as personal attacks. Children with aphasia are likely to have fewer chances to have a boy/girlfriend. Sometimes, they are encouraged to move from a regular class into a special education class or a special support school for handicapped children.

B. Vocation

Most people with aphasia stop working shortly after aphasia onset. However, the long-term employment status of children with aphasia has not been studied. Nonetheless, several studies have addressed long-term employment status of adults with aphasia. Parr et al., (1997) studied vocational problems of 50 adults with chronic aphasia. All subjects were aged 26–92 years and were 5–15 years post-onset. The employment rate was approximately 15%, and only one of those working had returned to a level of productivity equivalent to that of pre-aphasia employment. Hinkley et al., (1998) found that, of 31 participants with stroke-induced chronic aphasia between the ages of 23 and 69 years, all of whom had been employed at the

time of stroke, only 26% had returned to some level of employment, and none exhibited pre-stroke productivity. Thus, only a limited proportion of adults with aphasia seem to be able to work.

The severity of aphasia does not necessarily relate to return to work (Hinkley et al., 2002). In addition to the severity of aphasia, factors that contribute to good vocational outcome include workplace flexibility, social support, motivation, level of cognition, and level of motor impairment (Hinkley et al., 2002). Demographic factors such as age, gender, and education might also influence the ability to return to work, although these factors have not been sufficiently addressed. The Hinkley et al., (1998) study suggests that, in addition to the challenges associated with the severity of aphasia, both psychosocial issues and physical/neuropsychological functions play a critical role in a patient's ability to return to work.

Adults with aphasia who return to work with their previous employer often perform simpler types of work, whereas others have to change job because the previous job was simply too demanding. The most common difficulties in returning to work were related to job status and unwillingness to accept a position of lesser prestige even if it was necessitated by their disabilities.

There is an additional vocation-related problem for children with aphasia, and it relates to making a vocational choice. Vocational tests often require linguistic abilities and are therefore challenging for young people with aphasia. However, these young people often do not accept the more menial types of jobs suggested on the basis of vocational testing and might resent their family's efforts in arranging these jobs. Psychological and psychosocial issues should be carefully addressed before making a vocational choice.

C. Driving

Driving is a big issue for children with aphasia. In Japan, adults with aphasia who had already obtained a driver's license prior to their illness are required to get a doctor's permission to resume driving. They are able to resume driving when they are at a very low risk of seizures, have no visual or visuospatial problems, and have no attention dysfunction. Resuming driving is an important part of recovery. However, young people with aphasia have to pass a written exam to obtain their driver's license, which is highly challenging. For people with aphasia who do not drive, other transportation might also be difficult because of the requirement of buying a ticket, making a transfer, or following instructions.

D. Social Participation

People with aphasia tend to withdraw from interpersonal relationships and have small social networks. They are unable to take part in a conversation because they miss information or do not understand what has been said. Some affected individuals report a lack of symmetry in communication, and conversations tend to be one sided. Often, people with aphasia take a passive and predominantly listening role in group interactions and conversations. They feel alone even though they are with other people. Some people with aphasia feel they are a burden to others and therefore stop participating in social activities.

For most people with aphasia, the number of friends decreases after the onset of aphasia. Friends stay away because they do not know how to communicate with affected individuals, and as time passes it becomes more difficult for such individuals to make contact with others. Furthermore, making new friends is quite challenging. According to Hilari et al., 2006, 30% of people with aphasia indicated that they had no friends at 1 year or more post-onset of aphasia.

Davidson et al., (2008) studied this issue by observing how many people communicated with patients during the 240 hours of observation period. They reported that people with aphasia ($n = 15$) communicated with only 3 strangers and with 111 acquaintances, whereas age-matched people without aphasia ($n = 15$) communicated with 21 strangers and 220 acquaintances.

None of the people with aphasia visited friends during the observation period, whereas the age-matched people without aphasia visited a variety of places. Typical communications for people with aphasia included greeting friends at a stroke group meeting or respite center and brief conversations with friends who visited the affected individual's home, whereas typical communications for people without aphasia included extended discussions with friends and visiting and conversing with friends in their homes.

It can often be valuable to meet others with aphasia at an aphasia group. This can give persons with aphasia a sense of solidarity and make them aware that they are not alone in their affliction.

E. Managing Finances

Persons with aphasia are often unable to manage their finances independently and need assistance in budgeting. Some even require complete supervision of their funds and can sometimes express extreme frustration concerning their inability to be more involved in financial arrangements. People with aphasia often are eligible to receive a national pension in Japan; however, they may be unable to follow the procedures required to obtain this. For adults who became aphasic in childhood, managing finances can be quite difficult because most had not had any substantive experience with finances prior to the onset of aphasia.

4. REHABILITATION

Linguistic rehabilitation is provided by speech therapists. Unlike physical rehabilitation, aphasia continues to improve for many years after onset. This is especially true for young people with aphasia, some of who might experience improvement for more than a decade. The optimal rehabilitation strategy varies from person to person depending on the type of linguistic dysfunctions that are present, e.g., apraxia of speech, dysprosody, phonological impairments, and comprehension deficits. Rehabilitation aims to help patients regain communicative function to participate in activities of daily living.

A. Communication Methods

In cases of severe aphasia, communication can be accomplished nonverbally, e.g., by drawing, facial expressions, head shaking, nodding, laughter, crying, counting on fingers, pointing with hands, and gestures including rudimentary pantomime. Simple visual analog rating scales are useful to obtain information about how the person with aphasia is feeling, e.g., presenting the patient with 10 faces with expressions ranging from unhappy (1) to happy (10) and asking them to choose a face (Davidson et al., 2006). Making use of communication books or cards in which personal information is included can also facilitate conversation.

B. Communication Partners

Some caregivers have limited knowledge of aphasia whereas others have the skills required for effective communication with aphasia patients. Family members can greatly influence a patient's progress in rehabilitation. Some family members have the tendency to overprotect, excluding the aphasic individual from making decisions, whereas others are successful at promoting the individual's abilities. Family members and friends often do not know how to communicate with people with aphasia, and thus they must depend on a speech therapist to act as a bridge between patients and family members/friends.

Typical communication skills that are effective when communicating with people with aphasia include asking closed questions, taking a speaking pause when needed, and using short sentences. If an individual with aphasia lives with people who have the knowledge and skills to adapt to the communicative limitations of the affected individual, they have a better chance of achieving social engagement.

C. Personal Factors

Physical and neuropsychological factors affect the rehabilitation process. Some people with aphasia are confronted with physical impairments that restrict their ability to engage in routine activities. These impairments may include palsy, chronic pain, poor balance, epilepsy, and fatigue.

Neuropsychological factors that can affect rehabilitation include apathy, executive dysfunctions, and deficits in memory, attention span, and concentration. The more severe or numerous these conditions, the less the patient will be able to communicate socially. However, people with aphasia, even severe aphasia, can engage in activities that involve predominantly nonverbal functions, such as playing cards, drawing pictures, taking photos, and gardening, and can playing sports—if they have no palsy. These activities increase the sense of feeling connected with others.

D. How to Rehabilitate Young People with Aphasia

Young people have yet to fully learn how to participate as a member of society. Aphasia can profoundly affect their capacity for academic achievement, their future occupation, their social participation, and their home life, and they tend to withdraw from social situations.

The goal of rehabilitation for children with aphasia is to encourage them to socialize. To make the optimal vocational choice, care should be taken to ensure that they will be able to continue the chosen work. Engaging in any activities that require social participation is recommended. It is desirable that children with aphasia keep in touch with old friends. Speech therapists, family members, and communication partners are able to increase the opportunities for children with aphasia to achieve social engagement. For example, a speech therapist and a homeroom teacher in school could discuss the abilities of a child with aphasia to properly assess what he or she will be able to accomplish as a worker. This will make a positive difference in the affected child's life.

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Chapter 89

SUBCORTICAL APHASIA: STILL AN ENIGMA

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ABSTRACT

The concept that aphasia is caused by subcortical lesions dates back to the 1970s. However, this subject is still controversial, even today. Many researchers believe that the cortex is the neural center for cognitive functions, including language, and aphasic symptoms observed after subcortical lesions may result, in fact, from functional impairment of cortical activity. In contrast, other authors have advocated a specific role of subcortical structures in language. Advancements in our understanding have resulted in a change of focus for this issue. The term subcortical aphasia encompasses cases of aphasia resulting from lesions located below the cortex, which includes lesions to the basal ganglia, thalamus, and white matter. Advancements in our understanding of the fascicles that travel over the white matter and that connect different cortical areas related to language have revealed that white matter lesions can produce various changes in language. Thus, to elucidate the role of subcortical structures in language, unique injuries to the basal ganglia and thalamus must be separated from those that affect the white matter. The aim of this chapter is to present evidence for the specific involvement of the basal ganglia and thalamus in vocal production, speech, and language. Hypophonia, difficulties in speech initiation, disfluency, syntactic deficits and semantic-lexical disorders are specifically discussed. Thalamic and basal ganglia lesions seem to accompany more complex deficits of language. As the entire cortex has access to subcortical structures, even Broca's and Wernicke's areas, through cortico-subcortical loops, subcortical structures are predominantly integration structures and thus can participate in different aspects of communicative function. The participation of fronto-subcortical circuits and the integration with the posterior cerebral areas has been proposed. Subcortical structures possibly play an important evolutionary role in language acquisition by humans. Basal ganglia and the thalamus may have adapted its own *modus operandi* for speech functions. The cortico-subcortical network and the interrelationship

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between corticality and subcorticality should be considered to fully comprehend the function of language.

The notion that aphasia might be caused by subcortical lesions was formulated a few decades ago. Although ideas about subcortical aphasia have evolved over time, the subject remains controversial. Many researchers believe both that the cortex is the neural center for cognitive functions, including language, and that aphasic symptoms observed after subcortical lesions may result from the functional impairment of cortical activity. In contrast, other authors have argued that subcortical structures play a specific role in language.

Subcortical aphasia was initially understood as aphasia resulting from lesions located below the cortex, including lesions on the basal ganglia, thalamus, and white matter. Advancements in our understanding of the subcortical fascicles that travel over the white matter and connect different cortical areas related to language, which have arisen both from tractography [45] and from intraoperative stimulation of patients with brain tumors [23], have resulted in a change of focus with respect to this issue.

According to several studies, the presentation of subcortical aphasia is characterized by wide variability: in some cases, it is similar to classic cortical aphasia, whereas in others, it is not [42].

This variability might be partially understood if one considers that the language function requires both the participation and the interrelation (and thus, the connection) of multiple brain areas involved in phonological and semantic processing [45]. Other cognitive functions (such as executive functions) also participate in language processing. Subcortical fiber bundles connect the multiple brain areas required for verbal expression and comprehension in the context of human communication. Consequently, damage to one fiber bundle might cause disconnection and thus interfere with the language function in a manner that is not necessarily similar to that resulting from injury to the same cortical area.

As a function of the current state of knowledge and aiming to elucidate the role of subcortical structures in language, unique injuries to the basal ganglia and thalamus must be separated from those that affect the white matter. The aim of this chapter is to present evidence for the specific involvement of the basal ganglia and thalamus in vocal production, speech, and language. Because this matter has not yet been elucidated, this work's objective is to present the knowledge provided by recent studies, emphasizing the evidence that seems to provide the most promising basis for future research.

ANATOMICAL-FUNCTIONAL ASPECTS

The subcortical structures discussed in this chapter are the striatum (composed of the caudate nucleus and the putamen), the globus pallidus and the thalamus.

The entire neocortex is connected to subcortical structures. The relationships between the subcortical structures and the cortex are highly organized, i.e., definite cortical areas project to subcortical targets, which in turn send information back to specific cortical areas ⁴, thus forming a cortico-subcortical circuit.

The striatum receives connections from the cortex and projects to the (internal and external) globus pallidus and the substantia nigra. Through a parallel connection to Luys' body, the globus pallidus projects to the thalamus, which through its connection to the cortex completes the circuit. This structure is known as the classic cortico-striato-pallido-thalamo-cortical loop (Figure 1).

Some of the synapses in the cortico-subcortical loop and parallel connections (substantia nigra and Luys' body) are facilitatory, whereas others are inhibitory.

Stimulation and inhibition also occur in the thalamus. The nucleus reticularis (NR) is a thin sheet of neurons that covers the anterior and lateral aspects of the thalamus. The NR receives projections from all of the cerebral cortices and their associated thalamic nuclei in a topographic manner, but it sends inhibitory output only to the thalamus [72]. The area in the NR that receives inputs from a given cortical area (which in turn receives thalamo-cortical input from a given thalamic nucleus) projects to the same thalamic nucleus. The NR is organized into sectors, including motor, limbic, sensory, visual and auditory subdivisions.

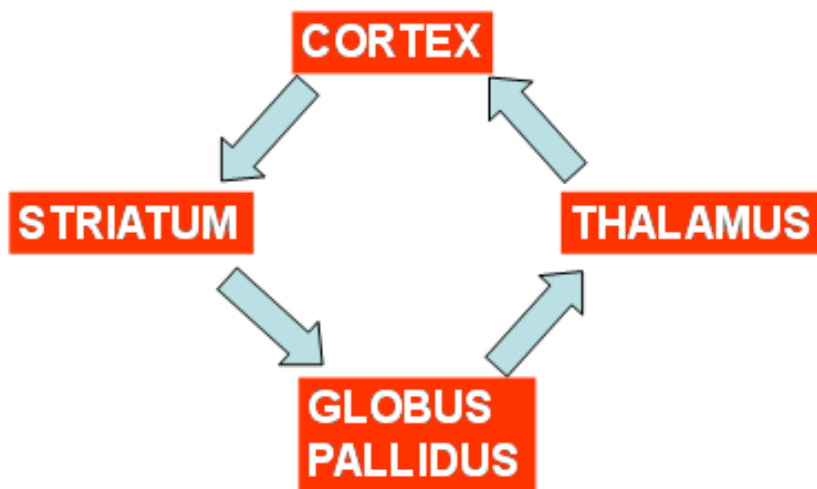


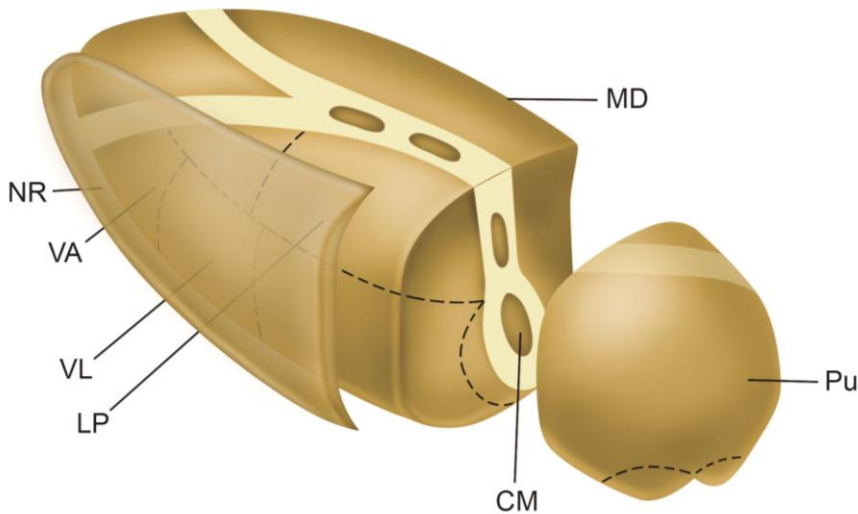
Figure 1. The cortico-striato-pallido-thalamo-cortical loop.

In other words, the signals that originate in the cortex might be reduced or amplified both along the cortico-subcortical loop and in the thalamus. The cortical information might be filtered or released in the cortico-subcortical loop; in either case, it is modified. The signals might also be modified in the thalamus, resulting in changes in the information sent to the cortex. The neurophysiological data thus indicate both that the thalamus is a center of integration and that it regulates the flow of information in the brain. Because the cortico-subcortical connections are highly organized and associated with various modalities/functions, they enable the subcortical set both to mediate communication among distinct cortical areas and to participate in the functions performed by the cortex.

The organization of the cortico-subcortical relationships might be exemplified by the case of the connections between the thalamus's medial geniculate body (MGB), which is a part of the auditory pathway, and the auditory cortex [44]. The area of the MGM that receives tonotopic inputs is connected to the primary auditory cortex, which is essentially associated with the reception of sound stimuli. In turn, the area of the MGM that receives non-tonotopic

inputs is connected to secondary auditory cortical areas in which the acoustic stimuli are analyzed. Thus, the cortico-subcortical circuits could drive not only the primary cortex but also higher-order cortices.

The thalamus also includes other nuclei (Figure 2). The centromedian nucleus (CM) is an intralaminar nucleus. It is considered an extension of the brainstem reticular formation, the function of which is to activate the cortex. The thalamic nuclei that are the most involved in language disorders include the ventral anterior (VA), the ventral lateral (VL), the medial dorsal (MD) and the pulvinar (PU).



CM = centromedian nucleus; LP = lateral posterior nucleus; MD = medial dorsal nucleus; NR = nucleus reticularis; PU = pulvinar; VA = ventral anterior nucleus; VL = ventral lateral nucleus.

Figure 2. Thalamic nuclei.

Subcortical Connections of the Frontal Lobe⁴

The frontal-subcortical connections are robust and involve the cortico-striato-pallido-thalamo-cortical loop [8]. The motor and premotor cortices project to the putamen, and the premotor cortex and prefrontal cortices send information to the caudate nucleus.

The motor circuit is the frontal-subcortical circuit that encompasses the projections of the motor and premotor cortices and is related to the motor aspects of speech.

The VL nucleus of the thalamus has been associated with motor control, including speech, because it receives projections from the putamen and information from the cerebellum. Nevertheless, from the functional perspective, the VL nucleus may be subdivided into anterior, middle and posterior portions. The middle portion is more specifically related to the motor circuit. The function attributed to the other portions is described later in this chapter.

The anterior cingulum circuit is motivational, i.e., it is involved in the initiation, maintenance and sequencing of behavior, including speech. The circuits of the orbital and dorsolateral pre-frontal areas relate language to the executive functions, which are relevant for communicative behavior. The main thalamic nuclei that participate in these circuits are the

VA, the VL and the MD. Although the main efference of the MD nucleus is the prefrontal cortex, in particular its dorsolateral portion, this nucleus is also connected to the cingulate gyrus, amygdala and temporal cortex [7], which is important for interaction with the emotional context during verbal communication.

Subcortical Connections of the Parietal and Temporal Lobes

The lateral posterior (LP) nucleus of the thalamus is related to the parietal cortex, whereas the pulvinar is related to all of the retro-rolandic areas and to the prefrontal cortex [36]. Together, the LP nucleus and the PU form the lateral posterior-pulvinar complex, which is the largest nucleus in the human thalamus. From the phylogenetic perspective, in humans, the development of this complex paralleled that of the parietal-temporal-occipital association cortex [58].

Subcortical Connections of Broca's and Wernicke's Areas

Recently, connections between the cortical language areas and the basal ganglia and thalamus have been demonstrated.

Direct connections from Broca's area (the pars triangularis and the pars opercularis) to the anterior putamen and to the nucleus VA of the thalamus have been mapped [24].

Strong connectivity of the thalamus, caudate nucleus and putamen/globus pallidus with Broca's and Wernicke's areas has been found. This connectivity is either bilateral and symmetric [10, 69] or lateralized to the left [10, 69].

These studies indicate the existence of a circuit that includes the basal ganglia, thalamus, and cortical language regions. Although the meaning of this circuit remains unknown, its existence is a prerequisite that substantiates its support for language processing [24].

CLINICAL ASPECTS

Overall, subcortical thalamic and non-thalamic (basal ganglia injury) aphasia exhibit the following characteristics:

- 1) Reversibility;
- 2) Speech motor production disorders: dysarthria, initiation difficulties, speed abnormalities and disfluency;
- 3) Repetition is often preserved [19];
- 4) Fluency: aphasia might be either fluent or non-fluent; and
- 5) Comprehension, which tends to be better preserved than expression. When comprehension is affected, faster recovery of comprehension skills is observed [42].

Differences were described in the presentation of aphasia caused by thalamic versus non-thalamic lesions.

Non-thalamic aphasia is characterized by the wider variability in its presentation. The language disorders associated with non-thalamic aphasia often correspond to those associated with classic cortical aphasia [33]. Hypophonia, i.e., reduced vocal volume, is present. Syntactic simplification of sentences is observed. Phonologic paraphasias are more common in non-thalamic than in thalamic lesions [43].

The manifestations of thalamic aphasia are considered more characteristic. The aphasias that result from anterior or posterior thalamic lesions can have striking similarities [20]. Either speech is fluent [57] or its fluency might be reduced [19] in a manner that becomes dependent on stimulation. Mutism occurs in cases with bilateral thalamic lesions. Patients can show nonfluent aphasia soon after stroke, but within a period of a few days, patients are more commonly described as having fluent output [20]. However, decreased fluency in output might continue for many months after injury [19]. Comprehension is less impaired. Comprehension might be significantly affected, especially at the phrase level, either when it includes many items or when its syntax is complex, which suggests involvement of the working memory [20]. Anomia and semantic paraphasia complete the clinical picture. At times, paraphasias are so severe as to deteriorate into jargon [20]. Lexical-semantic disorders are the most striking characteristic of thalamic aphasia [19].

Next, the pathophysiological mechanisms of some of the aforementioned clinical aspects are described and discussed.

REVERSIBILITY

In subcortical lesions, the symptoms of aphasia are of a reversible, often transient nature. The clinical manifestations might change over the course of a few days [20]. Aphasia caused by subcortical lesions tends to be less severe than aphasia caused by cortical injury. Most patients recover to a significant degree within 6 months of the ictus [29].

The prevailing concept among researchers is that the cortex is the neural center of language. Thus, the symptoms of aphasia found in cases with subcortical lesions result from cortical dysfunction. In turn, cortical reorganization allows for the recovery of the impaired function, thus accounting for the benign and transient nature of subcortical aphasias.

As a function of the relevance of the cortical-subcortical loops, mechanisms that involve diaschisis (cortical functional deafferentation) seem to account for the occurrence of cortical dysfunction. Positron emission tomography (PET) and single-photon emission computed tomography (SPECT) scans of subcortical lesions demonstrated hypometabolism/hypoperfusion not only in the affected areas but also in the distant cortex. Some authors have found an association between the degree of cortical hypometabolism and the severity of speech disorders. Improved performance often occurs in parallel to cortical activity's return to its normal level [13].

In an elegant study using perfusion and diffusion magnetic resonance imaging (MRI), Hillis et al. [34] (2002) have demonstrated both that pure subcortical infarctions are associated with cortical hypoperfusion and that the symptoms of aphasia disappear once the cortical blood supply is restored. However, A.E. Hillis's own group admits to having

observed aphasia in some cases of isolated left thalamic infarcts without cortical hypoperfusion [62].

The cause of the potential reversibility of aphasic symptoms in subcortical lesions continues to be debated.

HYPOPHONIA

Hypophonia—i.e., reduced voice intensity—is traditionally considered a characteristic of lesions that affect subcortical structures and/or their pathways. Upon request, the patient might transiently increase his or her voice volume but then reduce it again.

Little is known about the cortical areas involved in human vocalization. A functional MRI (fMRI) shows the primary sensorimotor cortex, supplementary motor area and anterior cingulum to be active [55].

The motor circuit, which is phylogenetically older, likely controls the voice volume, whereas the motivational circuit is likely involved in the initiation and maintenance of vocalization. The anterior cingulum plays an important role in vocalization in an emotional context ⁷. Adjustments likely occur in the transposition of non-human to human vocalization in the course of phylogenesis.

MOTOR SPEECH DISORDERS

Dysarthria, disfluency with perseveration and changes in the rapidity of speech are found in cases that involve subcortical damage.

Dysarthria

The left putamen receives information from the motor and premotor cortices and participates in the articulation process. Stimulation of the left putamen causes anarthria [28]. The VL is the main nucleus of the thalamus associated with the motor loop.

Studies conducted with multilingual individuals, who exhibit a vast articulatory repertoire, confirm the participation of the putamen in the control of articulation. In such individuals, the activation of the left putamen increases when they speak a non-native language, but only if they are not highly proficient in that language [3]. Gray matter density is increased in the left putamen of multilinguals compared to monolinguals [3].

An affected frontal-subcortical motor circuit may cause dysarthria.

Disfluency

Occurrence of disfluency is frequently reported in cases that involve subcortical injury. Neurogenic stuttering has been associated with lesions in almost any brain area. Nevertheless,

in 75% of the cases documented through neuroimaging, the lesions had a subcortical location [47] in either the basal ganglia or the cortico-subcortical circuit.

Stimulation of the middle portion of the left VL nucleus causes either perseveration on the first syllable [54] or stuttering speech [32].

Studies that are more recent suggest that the subcortical networks related to motor speech extend beyond the VL nucleus. Stuttering or syllable perseveration has been documented after CM thalamic stimulation [5], after stimulation of the internal globus pallidus [52], after combined cerebellar and thalamic lesions [64] and after stimulation of the left caudate nucleus [28]. Therefore, several thalamic nuclei, the basal ganglia and cerebellum are involved in the speech motor function.

The underlying mechanisms of disfluency in subcortical lesions remain unclear. A possible explanation for this phenomenon is that the basal ganglia play a key role in behavioral timing and sequential processing [18]. In language, the temporal sequencing process appears at most linguistic levels, from the sequencing of phonemes to form words to the sequencing of words to form a sentence to the sequencing of sentences within the context of discourse [38]. Altered sequential-processing capacity may explain the occurrence of disfluency and perseveration in the speech of patients with subcortical injury.

The relevance of the left striatum to linguistic sequencing has recently been confirmed. Participants were required either to rearrange materials sequentially based on linguistic or non-linguistic rules or to repeat a previously ordered sequence as a control task. fMRI data revealed a strongly active left-lateralized corticostriatal network that encompassed the striatum, dorsolateral and ventrolateral prefrontal cortex and presupplementary motor area while the participants were sequencing materials using linguistic versus non-linguistic rules.

Non-linguistic sequencing did not recruit this network; instead, its activation foci were both more posterior and more symmetrical. The authors suggest that the anterior striatum has extended its original sequencing role to subserve the function of linguistic sequencing in a domain-specific manner [12].

SYNTACTIC ASPECTS

Significant activation of the left caudate nucleus [50] and left putamen [25, 26] occurs during syntactic processing tasks. Although lesions in the thalamus cause difficulty both in sentence comprehension and in the use of complex syntax for verbal production [22], this difficulty may be caused by the participation of executive functioning and/or working memory, as discussed below. Syntax does not seem to require the support of thalamic processing [20].

Syntactic aspects have been relatively less studied in cases that involve subcortical lesions, particularly cases caused by vascular problems. Huntington's disease (HD) is considered a good model for the study of the participation of the basal ganglia in cognitive functions because the neuropathology at the pre-HD stage appears largely restricted to the caudate nucleus and related structures. It has been reported that Huntington's chorea is related to particular difficulties with increased grammatical complexity [35].

The findings of studies of HD patients have implicated the neostriatum in rule-governed (grammatical) aspects of language that involve both syntax and morphology [53, 65].

Teichman et al. [66] (2008) have applied three rule/lexicon tasks drawn from word morphology, syntax and a non-linguistic domain (namely, arithmetic) in early-stage HD patients. Using PET scanning, those authors have concluded that the left striatum encompasses linguistic and arithmetic circuits. In particular, the ventral area may be dedicated to rule computations.

The grammatical difficulties exhibited by patients with HD do not seem to be caused by an alteration of the working memory. The striatum seems to play a genuine role in syntactic processing that cannot be reduced to its involvement in working memory [60].

A functional cortical-subcortical syntax pathway that links Broca's area (BA45) and the left caudate head and that is associated with syntactic complexity has recently been described [67]. Those authors emphasize the functional relevance of the frontostriatal circuits and the integration of the striatum into this cortex-centered syntax network.

SEMANTIC ASPECTS: FRONTAL-SUBCORTICAL CONNECTIONS

Specific Cortical Activation and Focused Attention

The role of the intralaminar thalamic nuclei, such as the CM nucleus, in the diffuse activation of the cortex is very well known. Nevertheless, there is some evidence that the thalamus may regulate the cortical alertness and activation for a given specific function [51].

Stimulation of the left CM nucleus induces faster, more accurate responses to naming and language-comprehension tests [9]. Stimulation of the anterior portion of the VL nucleus increases speech rapidity and reduces response latency on visual naming tests [32]. Occurrence of tachylalia (increased speech speed) has been described in cases with subcortical injury.

The aforementioned data point to the participation of the activating system. By increasing the excitability of the cortical area to which it projects, this system may promote selective activation of the cortical areas needed for an ongoing function/activity. Multiple cortical areas that participate in the function in question may therefore be activated.

Nadeau and Crosson [51] (1997) have suggested the term “selective engagement” to refer to this process of temporarily engaging the topographically disparate regions of the cortex that are necessary to perform a task. Considering the proposed role of the frontal cortex in this process, the authors considered selective engagement as a form of guided attention.

Several thalamic nuclei have been described as being components of the “specific alerting system” [32], including the anterior portions of the VL, the VA, the CM, the PU and the NR nuclei.

Selective engagement appears to be accompanied by gamma rhythms (20-80 Hz) in both the cortical and the thalamic structures. Macdonald et al. [48] (1998) have shown that stimulation of an NR sector in rats induced gamma-frequency oscillations in the cortical areas associated with that region, which suggests that the NR plays a role in selective engagement. However, other thalamic nuclei might also induce rhythmic cortical activity. The possible role of the pulvinar is discussed below.

The cortico-subcortical loop is perhaps a component of the specific activating system. One study that has applied PET combined with a dopaminergic marker has found a correlation between the speed of phonological processing and left putamen activity [68].

The subcortical structures, particularly the thalamus, may optimize the allocation of focused attention for linguistic processing [49].

The hypothesis that subcortical structures participate in selective attentional processes indicates frontal-cortical connections.

Lexical Selection

Word-finding deficits are frequently found in cases that involve subcortical damage.

Stimulation of the posterior portion of the left VL nucleus and the lateral posterior-pulvinar complex causes anomia [54].

Naming is a complex task that demands the participation of several cognitive processes. In figure naming, visual recognition leads to a semantic representation of the object. The concept is then associated with an appropriate lexicon (word), which is selected among various similar options within the category to which it belongs. Once the lexicon has been selected, the individual must access the phonological representation of the word in question. These steps are interrelated and involve several brain areas.

The left prefrontal cortex is important for the lexical-semantic search and selection mechanisms. Individuals search for and retrieve (access) the lexicon in the semantic memory and select the appropriate option among many competing alternatives, which are then discarded.

Verbal fluency tests reflect this lexical search and selection. Several word generation tasks, such as verb generation [56], generating members of a semantic category and rhyme production [21], are related to the activation of the pre-supplementary motor area, cingulum, dorsal caudate, nucleus of the thalamus VA, inferior frontal gyrus and middle frontal gyrus of the dominant hemisphere. It has been found that the caudate enhances neural activity related to correct choices and suppresses activity related to incorrect choices [15, 16].

Studies of bilingualism have confirmed the relevance of the subcortical structures in the mechanisms for attention and lexical selection. Bilingual individuals need to recruit attention and selection mechanisms to control competition between their two languages. The basal ganglia play a key role in behavioral switching processing [18]. In bilingual aphasic individuals, words from both languages may appear in their verbal expression as a function of the damage to the frontal-subcortical loop [1]. In bilingual individuals, there is now evidence that the head of the left caudate, the pre-supplementary motor area and the cingulum are involved in selecting the less-proficient language when language switching [2, 27].

Therefore, the available studies indicate that the caudate nucleus and the thalamus might contribute to the process of lexical selection that occurs in the frontal cortex. Naming errors and semantic paraphasia may be the result of damage to these structures.

The frontal-subcortical circuits are becoming increasingly relevant in the study of subcortical aphasia. Subcortical lesions seem to be attended by more executive, complex language deficits [11]. In fact, some studies have noted the participation of subcortical structures in tasks that depend on the executive function, such as the elaboration of discourse and the interpretation of ambiguous or figurative passages [14, 17, 37]. Difficulties in

comprehending sentences that are long and that have complex grammar may be related to the working memory [20].

SEMANTIC INTEGRATION

Raymer et al. [59] (1997) have developed a test battery to distinguish among deficits at the purely lexical level, deficits at the purely semantic level, and deficits at the lexical-semantic interface. Those authors have applied the battery to patients with left thalamic lesions, concluding that the problem was located at the lexical-semantic interface. They have hypothesized the loss of the frontal-thalamic system's ability to selectively access the correct word.

However, another explanation is based on an inability to bind the semantic attributes that represent a concept to their corresponding lexical representation, which also results in naming errors. This hypothesis was investigated by Kraut M. A., Hart J. and colleagues [31].

Those authors have constructed a task that probes object retrieval from the integration of two features of the object. For example, "desert" and "humps" can be combined to make "camel."

fMRI has shown that successful retrievals are attended by activation of the pre-supplementary motor area, the caudate nuclei, the thalamic nuclei DM and pulvinar, and ventral temporo-occipital lobes [6, 39, 40, 41]. When object attributes were presented as word pairs, thalamic activity was limited to the left side [41]. When object features were presented in a word-picture pair, thalamic activity was bilateral [40]. Activity in the MD nucleus appeared to precede activity in the PU [39]. Those authors have hypothesized both that the earlier activity in the MD nucleus (with predominantly frontal cortex connections) was involved in a semantic search for a match and that later PU activity was involved in binding the features together in the process of object recognition.

The semantic system is widely distributed in the cortex [30]. The notion of an object derives from its visual image, the sound it produces, the motion it performs, its odor and taste and other attributes, in addition to the word that designates it. Different anterior and posterior cortical areas process the various characteristics of an object and are bound together to achieve its semantic representation.

Several lines of research have demonstrated that the PU synchronizes the neural activity of related cortical regions [31]. Slotnick et al. [63] (2002) have recorded thalamic and cortical activity during a single task of naming a target based on two attributes, detecting an increase in gamma activity at thalamic and cortical locations. Cortical and thalamic responses were phase locked, suggesting that they were related.

The PU nucleus is connected not only to the parietal, temporal and occipital cortices but also to the prefrontal cortex. The pulvinar is ideally positioned to achieve the functional integration of geographically separate but semantically related areas [31, 32, 70], thus uniting various elements to achieve the semantic representation of an object.

That hypothesis does not exclude either the lexical search and selection mechanisms or the role of the frontal-subcortical connections. However, it includes a mechanism of integration between the anterior and posterior areas for the purpose of semantic representation. This model agrees with the findings reported by Raymer et al. [59] (1997),

which indicates that thalamic lesions are associated with a deficit at the lexical-semantic interface. In addition, this hypothesis accounts for the clinical manifestations of aphasia due to thalamic injury, in which the main alteration has a lexical semantic nature and is characterized by anomia and semantic paraphasia.

The participation of the basal ganglia in that model cannot be ruled out, although according to some authors [70], they do not play a role. Lexical-semantic difficulties are found in patients subjected to pallidotomy [71]. Some studies suggest that the striatum is involved in the stage of language processing during which the syntactic-semantic-contextual set is analyzed, i.e., when the appropriate response is selected according to the given context [46]. This late-stage integration takes place after the first lexical access and reflects processing at the sentence level in a given context, i.e., when semantic representation is allied both to the communicative situation and to the grammatical structure.

Based on the current state of knowledge, we can affirm that there is some evidence that the subcortical structures participate in the lexical-semantic mechanisms in harmony with the cortex.

FINAL CONSIDERATIONS

Despite the advances in research and neurophysiological and neuroimaging techniques, we still lack an understanding of the role played by basal ganglia and the thalamus in language. More specifically, the role of the striatum remains controversial.

Clinical practice and research studies indicate that the aforementioned structures participate not only in vocalization and the motor aspects of speech but also in syntactic and lexical-semantic processing.

The primary controversy is between researchers who believe that the symptoms of aphasia associated with subcortical lesions are actually caused by cortical dysfunction and researchers who believe that subcortical structures play a specific role in both language and speech.

Nevertheless, instead of independence, it seems more reasonable to posit an interrelationship between the cortex and subcortical structures. The basal ganglia and the thalamus participate in mechanisms involved in activating and regulating the cortical processing of language and speech.

Any view of the role played by the subcortical structures in cognitive functions should consider the evolution of the nervous system, which occurred as a hierarchical process, compared to the evolution of the most recent structures, whose functions developed over the functions of the oldest structure. In human ontogenesis, the brain maturation process results in the increasing relevance, during adolescence, of cortical regions in commanding the global network, whereas the caudate, cerebellum, thalamus, fusiform and parahippocampal gyri lose their relevance [61]. An older area might adjust to a newer function, not by specifically participating in it but by using its own *modus operandi* to support it. For example, the hesitancy, perseveration in the first syllable and disfluency that manifest in the speech of patients with subcortical lesions may be part of the general problem of initiating and sequencing any movement [8].

Therefore, it is possible that the basal ganglia and the thalamus do not have a specifically linguistic function. However, in the course of evolution they may have adapted a canonical circuitry for speech functions [8].

This subject should instigate further research. Subcortical structures might have played an important evolutionary role in humans' language acquisition. To fully comprehend the function of language, both the cortico-subcortical network and the interrelationship between corticality and subcorticality should be considered.

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Chapter 90

APHASIA MANAGEMENT PRACTICE: CARE AND SUPPORT – A MUTUAL CONCERN AND A SHARED RESPONSIBILITY

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ABSTRACT

This chapter describes consequences from aphasia from the perspective of those affected and their close relatives. Nine persons with lived experiences of aphasia contribute to data by means of interviews, published books and diaries, and seventeen close relatives narrated about their situation as informal caregivers. All that information was interpreted in three parts in accordance with a lifeworld hermeneutic approach. The first, which dealt with existential consequences of aphasia, indicated that the intentional, non-verbal act when something is recognized *as* something is *not* affected by aphasia. Aphasia merely affects the world of symbols, which is necessary for interaction with others. It is therefore connected with feelings of alienation, inferiority and shame in social settings. The second part, which dealt with the issue of professional aphasia care, suggests that adequate care from the affected person's point of view presupposes a secure base and a caregiver who recognizes and trusts the patient's ability to think and communicate albeit not always verbally. In the third part the investigation is directed to close relative's situation. It is suggested that a life together with an aphasic person means being used as a bridge between the aphasic person and the surrounding world. This leaves close relatives with a lonely burden of responsibility. Finally a synthesizing analyse suggests that aphasia management practice includes care and support as a mutual concern and a shared responsibility for professional carers, close relatives and community service. The principles for that are outlined under seven main heads.

INTRODUCTION

Many models for recovery from aphasia processes do not take into account that remaining speech impairments lead to difficulties in interacting with friends and relatives,

which in turn, can delay recovery. This chapter on aphasia management practice therefore concentrates on interpersonal relations as a secure base for further rehabilitation.

Aphasia victims meet professional carers from the on-set of their illness. Yet in a literature review Tacke (1999) found no research investigating the carer's significance for the results of the aphasia treatment. On the contrary the review shows that carers working in general hospitals rarely centred their attention on the individual needs of the aphasic patient, with the result that there is little interaction between carers and patients during the hospital stay.

However, interest in caring science research has increased during the 21st century, and it has been found that professional carers can provide support that enhances the patient's self-esteem and help them to gain a positive but realistic view of the situation. Adequate caring might even encourage progress towards rehabilitation, and turn a blocked situation into a secure one. Andersson and Fridlund (2002) found that interactions with professionals were adequate when they balanced and compensated for disabilities. Sundin and Janson (2003) observed patient-carer interactions during morning care, and they interviewed excellent carers, who were recommended for the study by colleagues. Those professional carers neither reflected nor talked much during caring; instead they used their hands to communicate through touching. The carers thought that talking disturbed the ability of severely aphasic patients' to concentrate.

Caring measures also need to take existential issues that follow on from aphasia into account. That is particularly important preventing the development of post-stroke depression. Depression is a common experience related to coping with post-stroke effects and has a negative impact on rehabilitation (Robinson, 2002). Depressed persons with aphasia often suffer from reduced self-esteem, which may change their self-image. Depression may further affect the motivation needed to improve functional independence, as failure to participate in the community due to impaired verbal ability often results in feelings of loneliness and isolation.

That the effectiveness of conventional therapies has not been conclusively proven (c.f. Berthier, 2005) has led to attempts to integrate knowledge from several therapeutic domains in efforts to introduce other strategies. Cunningham (1998) suggested a counselling approach for patients with severe aphasia, in order to facilitate adaptation to the situation. Van der Gaag et al. (2005) proposed that therapeutic approaches should include family members in order to improve quality of life and communication, as most caregiving is provided by close relatives, at least in the long run.

Research into informal caregiving also emphasizes the importance of non-professional careproviders (Lau and McKenna, 2001). Yet little research is directed to close relatives' problems in an abruptly changed life situation (c.f. Sawatzky and Fowler-Kerry, 2003; Blake, Lincoln and Clark, 2003; Tooth et al. 2005). The same is true for close relatives' educational needs (c.f. O'Connell and Baker, 2003).

According to Bäckström and Sundin (2007) close relatives of stroke survivors often sacrifice themselves and disregard their own needs. Wallengren, Friberg and Segesten (2008) describe such experiences as being "shadows", partly because they are invisible to professional caregivers who focus entirely on the patients and frequently forget their families.

The ability and willingness of close relatives to understand and respond to the aphasic person seems nevertheless to be of vital importance. This is in clear contrast to the amount of attention that has been paid to specific problems from the perspective of informal caregivers.

The starting point for the study that now follows is the assumption that we need knowledge about the consequences of aphasia as an existential challenge in order to provide adequate care and support, which in turn can serve as a firm base for further rehabilitation. The first part describes the experience of suffering stroke and aphasia and the struggle to regain the ability to communicate. The second part describes the conditions needed for properly functioning professional aphasia care, seen from aphasic persons' viewpoint. The third part concerns those closely related to an aphasic person, and their need for support from community service.¹ Finally the three parts are compared and synthesized in order to reach a further understanding on how to provide a firm and solid caring base for a person with aphasia, which can serve as a foundation for further rehabilitation.

STUDY DESIGN - A LIFEWORLD HERMENEUTIC APPROACH

The study has a lifeworld hermeneutic design. Lifeworld research emphasizes individuals as living wholes and focuses on the world as it is experienced prior to the formulating of any hypothesis to explain it (Dahlberg, Dahlberg and Nyström, 2008). It does not look at objects and events as such, but at the way in which they are perceived and experienced as phenomena. Lifeworld research basically draws on the works of the philosophers Edmund Husserl (1970) and Hans-George Gadamer (1997).

The interpretative analysis was inspired by Paul Ricoeur (1976). It was through the dialectic of understanding or explanation that Ricoeur developed his interpretation theory, in which understanding and explanation overlap and cross each other. The range of propositions and meanings in the set of data, which is described below, has thus been unfolded in the phases of explanation.

Understanding emerges from the chain of partial meanings moving toward a whole in an act of synthesis, and it relies on the meaningfulness of expressions such as vocal and written signs. This is in accordance with Ricoeur who suggested that understanding, explanation, and interpretation are mutual forms of the concept of understanding that rely on the same sphere of meaning.

In approaching the issues involved in suffering from aphasia, professional aphasia care and being closely related to an aphasic person, interpretations necessarily involve several attempts to explain meanings in the data. For this reason, theories from existential philosophy and psychodynamics are sometimes used as analytical tools. When that is the case the theoretic tool is briefly mentioned in the findings.

Four women and five men, aged 45-72 at the time of data collection, participated in the first two parts of the study. The data comprise transcribed interviews, autobiographies and excerpts from diaries. Data were collected in Sweden, from nine Swedish-speaking informants, who made their contributions to the data set on 16 different occasions. They were purposefully selected from among members of two branches of the Swedish National Fellowship for Aphasia, in order to obtain variation in age, gender, type of aphasia and timelapse since occurrence of the cerebral lesion. Type of aphasia was reported by the informants themselves or their spouses.

¹ The three parts were initially interpreted separately and have been published as three different papers (Nyström 2006; 2009; 2011).

During the interviews it was necessary to communicate in a way that facilitated understanding. Some interviewees could speak adequately, while others still exhibited the symptoms of expressive and/or impulsive aphasia. One important criterion, which limited the number of potential interviewees, was the need to communicate relatively well, orally and/or in writing. In this study communication includes both explicit and implicit meanings that are expressed and interpreted in social intercourse. The interviewees had thus either recovered or learned how to carry on a conversation in spite of the difficulties of speaking or understanding words.

The interviews followed the principles of the life-world approach mentioned above. The interviewees were invited to reflect as openly and deeply as possible on their experiences of aphasia, their struggle to regain the ability to communicate, and their experiences of aphasia care. These interviews were audio-taped and transcribed verbatim.

When more information was required in order to establish the relevance of a tentative interpretation, some informants were contacted again for follow-up interviews. In these interviews the questions were more specific and aimed at obtaining information that could further illuminate the relevance of tentative interpretations (see validity criteria below). The follow-up interviews were not audio-taped but notes were made.

Three interviewees supplemented their interviews with written material that further illuminated their statements. These included diaries or written advice from the interviewees to others with aphasia. Two autobiographies that described experiences of aphasia (Tropp-Erblad, 2002/1882; Dahlin, 1997) were also used as data, but were complemented with interviews. Time lapse since the occurrence of the brain lesion varied from 1-23 years.

The close relatives, 11 women and 6 men, who were interviewed for the third part of the study were purposefully chosen through the aphasia associations. As it was presumed there would be variations in community service they were selected from three different Swedish municipalities, a big city, a smaller town and a rural municipality.

There were 10 spouses, 6 adult children and one parent of aphasic persons. These interviews also followed the principles of an open life-world approach, and all began with a question about what it is like to be closely related to a person with aphasia. The interviewees were encouraged to describe their experiences and their actual life situation as deeply as possible. Pliable probing questions were asked in order to get them to reflect on matters that were not at first described.

INTERPRETATIVE ANALYSIS

Within the three texts statements were compared and put together according to similarities so that further meanings could be abstracted from the data. Tentative interpretations emerged, each illuminating one aspect of the complexity that characterized personal experiences of aphasia, professional care and the situation as close relative. The relevance of the tentative interpretations was evaluated using the following validity criteria:

- The source of an interpretation should only be an actual piece of the data. If theoretical support is used, it is merely as a tool to suggest explanations for a certain item of information. Thus no theory must guide the whole interpretative process.

- No other interpretations should be found that better (more meaningfully) explain the same data.
- There must be no contradictions between an interpretation and the data.
- When more information is required in order to establish the relevance of a tentative interpretation, informants must be contacted again for follow-up interviews.

All interpretations that were deemed to be valid were compared with each other in order to arrive at a comprehensive understanding for each analytical part of the study. In the final synthesizing analysis all three parts were compared, with the following validity criteria in mind:

- The level of abstraction is connected to the principle of moving from the parts to the whole and vice versa, striving for consistency in the jigsaw puzzle of interpretation.
- The consistency of the picture that emerges must be further strengthened by ensuring that no data of general importance are omitted from the synthesizing analysis.

The First Analysis

Existential Consequences of Aphasia

The following first interpretative analysis is based on data from nine informants with personal experiences of suffering a stroke with aphasia. They are also familiar with the struggle to regain the capacity to communicate. As mentioned above, they contributed to the data in several ways by means of interviews, auto biographies and diaries.

Below six interpretations are presented of that information which covers six different aspects of the research phenomenon; existential consequences of aphasia. A comparison of these different aspects culminates in a comprehensive understanding that illuminates the existential meaning of losing the world of symbols. The quotations are excerpted from the data.

It is Essential to Repress Feelings in Order to Act Rationally during the Acute Phase

Despite the fact that warning signs, such as TIA or venal thrombosis, were common, all the interviewees experienced their aphasia as a bolt from the blue. For some, all verbal communication suddenly ceased; while others could speak fluently but without making any sense. Finding oneself in such a situation was generally perceived as a horrific experience, although in retrospect it was only partly associated with feelings of shock and fear.

When the stroke occurred only one interviewee became unconscious, while the others were confused and unable to act rationally. One of them recalled that she just wanted to take a nap and lie down in the snow beside her car. For another, the first indication of a brain lesion was somewhat unusual; he bid on everything at an auction. Those who were less confused recognized that they must act in order to get help, and afterwards they were surprised by their ability to act rationally. One man, for example, was alone in his weekend cottage when it happened and knew immediately that he was unfit to drive. He understood that he had to walk quite a distance in order to contact his neighbour.

Some concluded that the capacity to repress feelings of shock and fear is due to a biological process associated with their cerebral lesion, while others explained their calmness as a mix of biological and psychological processes.

Your body cannot accept that you cannot speak. You can't understand it emotionally. (Is this, do you think, due to the cerebral lesion?) No, not just the lesion, it is also a psychological process.

Such statements indicate that the calm is experienced as a process of repressing feelings as a result of psychological defence mechanisms, such as isolation and rationalisation. The concept of isolation is used by ego psychologists (Freud, 1966; Blanck and Blanck, 1974) to describe mental processes where feelings are separated from thoughts. Isolation as a personal characteristic can indeed be problematic, but it is also an important resource in moments of threat and panic. The isolation of feelings seems in fact to make it possible to put thoughts aside in order to act in a rational manner. The man who became aware of his aphasia while alone in his weekend cottage knew immediately that he must repress his feelings in order to get help and employed his isolation and rationalisation skills as a conscious strategy, contrary to the theory of psychological defence-mechanisms, as an unconscious phenomenon.

When I recognised that I could neither speak nor write I understood immediately that it was important to remain calm and take one thing at a time, and I repeated that to myself every time I was almost seized by panic.

After arrival at the hospital it was possible to stop repressing feelings. This supports the interpretation that feelings are repressed only when it is essential to act rationally. On the other hand, other interviewees stayed calm for a long time, even after their arrival at the hospital. One woman was unaffected by her severe communication disabilities for a period of two years. It was not until she started to speak again that she became frustrated and angry when she was unable to communicate.

It thus appears impossible to fully explain the calmness in the acute phase of aphasia. Nevertheless, it seems fair to conclude that it is important to be able to repress feelings in an acute situation when it is urgent that decisions are made about how to get help.

Emotional Life Is Intertwined with the Struggle to Regain Language

Some interviewees regained the power of speech within three months, but others still exhibited greater or lesser impediments of language, both oral and written, at the time of the data collection. They spoke slowly and now and then failed to find the right words. Some also found it difficult to understand non-verbal expressions, such as nodding for yes and shaking the head to indicate no.

Others could neither count nor estimate time. One woman could not read or write, while others had difficulties writing. A few interviewees failed to understand some questions during the interview, mostly abstract ones. In such cases, being allowed to read the questions increased their ability to communicate.

As time passed and their ability to communicate improved, the interviewees successively became increasingly frustrated and angry at their failure to express their thoughts and/or understand what other people were saying.

Nowadays I am so angry about not being able to speak properly. It [the ability to speak] can be locked away when something else, such as a headache, is bothering me. It is so infernally hard and arduous to think and speak.

One woman recalled two mute years and described a sense of tranquillity that afterwards became totally inadequate for her. When she was unable to express herself she had a feeling of being on the point of death, where nothing seemed to really matter. Another woman said that her head was emptied of all thoughts during the period of severe aphasia.

It was so odd, as if there was no activity in the brain. It must have been the stroke and the oedema in the brain.

After a period of successful speech training, this woman became anxious and frightened, as she felt pressurised by the idea that if one failed to regain the power of speech within five years one would remain mute forever. Other interviewees also reported that their calmness disappeared when they began to speak again, thus implying that the force driving them to speak increased in line with their anxiety. One interviewee, who had recovered from impressive aphasia, recalled having many words in her head but that they were just a chaotic mess. Initially she was calm, because she was able to understand and believed the physicians' reassurances that she would recover. Feelings of anxiety, fear and anger seemed, however, to increase in line with her successful efforts to regain the use of language.

For one interviewee, the acute phase of aphasia coincided with the death of her son. She could not cry "properly", her body just shook. Furthermore, she could not stand being close to others, not even her own family. When she regained her speech she started to cry and work through the sorrow in her heart and was pleased to have her family by her side.

Is language a precondition for feelings and feelings a precondition for language? If so, it would be impossible to explain sadness, rage and anxiety among infants and animals. It seems more reasonable to assume that increased activity and capacity in the brain trigger feelings of despair, and the struggle to regain the power of speech as well as the ability to communicate. Such experiences are probably best understood as an interwoven process of biological and existential conditions that enable the most significant of human abilities: language. Thus it appears important that the initial calmness disappears in order to make room for a fighting spirit.

It Is Not Necessary to Name the World in Order to Recognize Its Meaning

Some psychologists (cf. Blanck and Blanck, 1974) emphasize verbal language as a precondition for thought, especially those thoughts that are necessary for formal operations. In the present study the interviewees with expressive aphasia were silent, even inside their heads, but were by no means devoid of thoughts. They claimed to have been able to grasp meaning without access to words. One of them described how "words ran out of my head" with amazement and confusion. He found that in spite of the total silence inside his head he could still think, albeit non-verbally.

It is not true that you cannot think without words. I just stood there and analyzed the situation. I was totally calm, incomprehensibly tranquil as a matter of fact, and I discovered another language, a nonverbal language, and it worked!

This interviewee talked about a “meta-language”, a non-verbal and silent language, which, according to him, may be hidden behind the verbal language and therefore inaccessible to a person who can speak. He stated that this “meta-language” is complete in itself and consists of entireties, whole meanings. These meanings are experienced as absolute truth, you do not consider any other options or alternatives as meaning already exists.

All interviewees, despite their different types of aphasia, claimed that they had been aware of everything around them in their waking life, despite the fact that they could not communicate anything about it to other people.

I can't explain exactly how it was. I knew that I could think, and I did think, but I don't recall any words.

One interviewee, who was unconscious after the stroke, found that she was mute when she regained consciousness. When she tried to shake her head for no and nod to indicate yes everything went wrong. Her head was empty; she had no access to any words with which to communicate. After a while she recognized single words from time to time, but no coherent language.

Nevertheless, she claimed that she understood everything that was going on around her. Another interviewee knew immediately that he must act in order to get help. He could neither speak nor write, but he could consider his options and ponder alternatives, so as to obtain assistance. A third individual, who had experience of impressive aphasia, claimed to have been able to understand concrete as well as abstract matters in spite of the chaotic language inside his head.

A few interviewees appeared, however, not to understand all the questions during the interview. One of them said that he had learned to maintain the initiative in a conversation in order to avoid situations that included interpretations of another person's verbal messages. When given time during the interview he proved capable of adequately answering questions that were concrete and complemented by gestures and/or written words. He related that, after four years with impressive aphasia, he had learned how to get a rough understanding.

We may all have experience of word-less and holistic meanings in our dreams, and it seems reasonable to interpret the “meta-language” described by one interviewee and the immediate understanding described by most of the others, as an un-reflected dreamlike recognition that does not require words.

In common with some of the interviewees in this study, we are not always as upset as we might have reason to be during the surrealistic experience of dreaming. When we wake up we can be overwhelmed by feelings, but cannot understand the feelings without reflection. Reflection requires access to words. Interpretation of dreams also presupposes language (Freud, 1968). Similarly some interviewees in this study reflected on their initial dreamlike condition for the first time during the research interview.

Worrying About Being Considered Stupid

Becoming fully aware of the consequences of aphasia appears to be both frightening and humiliating, despite regaining the ability to communicate. One man, who had regained all his communication skills at the time of the data collection, recalled his awareness of the gravity of his condition when a physician talked to him to give him an overall picture of his brain lesion, without saying anything about rehabilitation.

It was a shock! The physician pointed to the wall and asked me what it was. The words were not there, I couldn't name anything. Nothing was there!

Another interviewee, who immediately understood his disastrous situation, described in his diary feelings of rage, humiliation and despair, when he realized after some time that his communication impairment would remain, even when the physical consequences of the stroke had more or less abated.

To just sit there mute and stupid, with one's head full of more or less brilliant comments, not being able to make use of them, it is trying, dreadfully trying, and it makes me very angry. I feel totally worthless, like a parcel labelled: "worthless sample".

Several interviewees were in the habit of always using bank notes when they went shopping, in order to avoid the humiliation of failing to hand over the right coins to the salesperson. A communication impediment, or worse, total muteness, was thus experienced as a much more devastating individual catastrophe than any physical handicap. The interviewees described feelings of being locked inside their bodies. They lost their sense of dignity because they were unable to communicate adequately. Verbal language was experienced as a prerequisite for participating in society, and without language they thought that they were considered stupid. The interviewees' self-esteem and sense of dignity were thus threatened by their own interpretations of other people's assessments of their capacity to think and talk properly.

When I lost my speech I lost my sense of security. As I had no words, I couldn't give expression to nuances. When I could not speak I appeared to be a person who could not think in shades of meaning. It was impossible for me to change that, I simply had to put up with other people's way of looking at me.

Existential Loneliness Causes Feelings of Alienation

Most interviewees also claimed that the healthcare system abandoned them, because no professional caregiver supported them in their early efforts to regain the power of speech. Some of them started to practise words at night in the hospital, soon after the onset of their condition, in spite of recommendations to rest and take it easy. A librarian, as opposed to a care-provider, understood one man's mute plea for something to read, after which he started to recall words. In another case, it was the patient's 12-year-old grandson who wrote words on flash cards, to be used for communicating care needs. The absence of professional support in the interviewees' struggle to regain speech gave rise to feelings of loneliness, but even more devastating were the serious consequences for their private interpersonal relations.

If everything previously well-known appears strange, and communication with those around you is cut off, then the soul is incarcerated in an impenetrable prison, it must be the loneliest soul in the world.

A previously unknown feeling of loneliness, which increases and extends to all domains of everyday life, can thus follow the single-handed struggle to regain the ability to communicate.

Feelings of being alone, imprisoned in the body, appear to create a distance to other people. Some of the interviewees no longer knew who they were, because of their inability to communicate adequately. Their identity seemed to vanish and they considered themselves merely as handicapped people. Not knowing who you are and being unable to maintain your self-esteem makes it easy to distrust the good intentions of others.

When B called he said that my speech was much better than last time he talked to me. But last time he said that I spoke just as well as before the stroke.

Existential loneliness seems to increase when other people ignore or make light of the communication impairments. In the most harrowing moments there are feelings of alienation that include both internal life and the surrounding world. One woman, who used to enjoy her own company when thinking and talking to herself, found that she was not the same person inside when she suffered from impressive aphasia. It made her feel completely alone. In the following statement she describes her feelings of alienation after being unsuccessful at an evening course in English.

The last bus was very crowded. I looked at the people. It was like a Brecht play, as if they were wearing masks. I could not see the faces behind the masks, and their eyes were like empty hollows. I got off the bus and started to walk home. When I arrived home my husband looked at me. He was also wearing a mask!

Strategies for Handling Communication Problems Help to Create Some Distance to the Situation

Many statements could be interpreted as strategies for regaining control over a life situation, despite an impaired ability to communicate. As described above, the strategy aimed at regaining control could start with an immediate and single-handed fight to learn to speak again with no help from professional caregivers, who were considered negligent in terms of their responsibility to assist patients in this struggle.

For others, who continued to suffer from the effects of impressive aphasia, it remained difficult to interpret messages from other people. One strategy that could reduce the instances of humiliation was to control any conversation by choosing the topic, which increased the chances of guessing the meaning of the talk. This strategy, however, was not always successful because of the risk of being excluded from the conversation if one guessed incorrectly. Under such circumstances, giving up could be the easiest way out. A more successful strategy was to ask other people to speak slowly, in order to increase the time available for understanding a verbal message. This may be a similar strategy to the one previously mentioned, i.e., avoiding paying with small change.

Other activities that could be interpreted as strategies for increasing control, especially among those who had been successfully rehabilitated, were commitment to other persons with aphasia, either professionally or in non-profit making organisations. Yet another was not to be afraid to make a fool of oneself.

Friends who failed to recognize them as the same person as before the stroke were not considered real friends. Another way to control the situation was to maintain one's self-esteem and dignity with the help of humour and self-irony. Using humour in such a way may serve as an internal triumph in a life situation that might otherwise be hard to manage.

Sometimes I made fun of myself just to make things easier. But I was deeply concerned and frightened.

A common denominator among the different strategies was that they created a distance between oneself and one's problems and motivated the interviewees to undertake various measures. Involvement in something other than problems, also appeared to increase well-being, *for example* taking an interest in the resources available for rehabilitation and policies for prioritising healthcare problems.

To Lose the World of Symbols - Comprehensive Understanding

When the nine persons who described their experiences of aphasia fell ill they were unconscious, confused, or wide-awake and recording what was happening. In spite of initial shock and fear, the following period of silence or unconnected, inadequate words in the head was like a dreamlike state characterized by a surrealistic sense of total calm in the eye of a storm. The external world was experienced as an unconditional entity that could be grasped without being able to talk, and sometimes not even understand, what others were saying. The phenomenological theory of intentionality may help in understanding such a non-verbal, pre-reflective grasp of reality. In employing the concept of "intentionality", Husserl had no doubt about the inherent power of what he called the "natural attitude", i.e., "the everyday immersion in one's existence and experience, in which we take for granted that the world is as we perceive it, and that others experience the world as we do"(Husserl, 1970 in Dahlberg et al. 2008). In the act of intentionality we do not critically reflect, we are merely in the everyday world in which we live.

When the interviewees in this study were stricken with aphasia, they appeared to lose the ability to move from intentional consciousness to reflection. The world around them was taken for granted in the same way as the air they breathed. They obviously did not find it necessary to analyse their experiences, but appeared to remain in intentionality during the time that they had no access to words.

Is it possible to intentionally recognize reality without words? According to Merleau-Ponty (1989), one of Husserl's followers, such a conclusion seems eminently reasonable. Words are not a precondition for thought. On the contrary, thought is a precondition for language.

It [the word] is not without meaning, since behind it there is a categorical operation, but this meaning is something which it does not have, does not possess, since it is thought which has a meaning, the word remaining an empty container. It is merely a phenomenon of articulation, of sound, or the consciousness of such phenomenon, but in any case language is but an external accompaniment of thought (Merleau-Ponty, 1989 p.177).

A further aspect of intentionality is the ability to think in entirety, without words, immediately after being struck by aphasia. Most of the interviewees not only grasped and recognised their reality, but were later surprised at their own calmness as well as their ability to cope with the acute situation. Even those with strong elements of impressive aphasia remembered and were able to describe the acute phase, despite the fact that they were confused when it occurred.

Hence, aphasia reduces neither perception nor the immediate ability to recognise something *as* something, rather the reverse. The act of intentionality appears to be a more powerful experience than ever before when words are lost; it was interpreted as a “meta-language” by one interviewee in the study.

Instead, the devastating consequence of aphasia is its effect on interpersonal life, one’s ability to interact with others. Interaction presupposes symbols and signs that mean something in accordance with convention within a specific cultural context (Charon, 1989). Words, money, signs and many non-verbal expressions of meaning are examples of symbols. In order to communicate we must make use of significant symbols that are accepted as carriers of meaning in our society. Communication also involves the ability to generate a certain meaning in the minds of others, as well as the capacity to understand what others want to say. Impaired symbolization capacity was exemplified in this study by the interviewees’ difficulty in using coins, estimating time and understanding gestures and so on. Most devastating of all was, of course, the loss of those symbols that are important for language. It was not just the written or spoken word itself that appeared to be devoid of meaning but also complementary symbols associated with speech, such as nodding for yes and shaking one’s head to indicate no, recognizing expressions of joy or sadness or whether a voice is raised in anger or happy excitement etc. Due to the impaired symbolization capacity, the most serious existential consequences of aphasia appear to be loneliness, feelings of humiliation, inferiority and alienation when efforts to exchange thoughts, feelings, attitudes and experiences with others turn out to be unsuccessful. The interviewees in this study suffered, or had suffered, from different types of aphasia of varying severity. For some, this condition more or less affected all domains of their ability to use and interpret symbols.

The emotional consequences of the loss of one’s world of symbols seemed to increase the existential consequences. This was most obvious in one interviewee who lost her son two weeks after suffering a stroke and was unable to mourn for him until she regained her power of speech. She could not cry when she had no words, as if tears are also a part of our commonly shared system of symbols. She and several other interviewees described their difficulties in relating to others, not because they could not speak, but due to feelings of alienation. One of them even felt that the people she encountered were wearing masks. There was only one feeling which all interviewees experienced at an early stage, namely anger.

Over time with increased, but still inadequate, verbal communication, the initial sense of calm disappeared and feelings of self-contempt, suspicion and insecurity emerged. This stage of aphasia was like being in prison. The dreamlike state, the silent “intentional world” described above, was now past over and the interviewees were fully aware of the consequences of losing access to those symbols that constitute connecting links in society. They began to struggle to regain speech and other skills that are connected with symbolization, because they now realised that this was the only way to reclaim their position in society. Their fight was associated with many threats to their self-esteem, but those who were successful were no longer locked inside their bodies. Even if some communication impairments remained at the time of the data collection, the interviewees with mainly expressive aphasia could leave their prison having gained an understanding of the importance of communication and interpersonal relations. The most significant sign of successful rehabilitation appears to be the capacity to be completely involved in something other than one’s own problems, such as work, caring for one’s family, commitment to others with

aphasia or political involvement in prioritising rehabilitation for patients with aphasia and so on.

To sum up; the existential meaning of reversible aphasia is that communion, interaction, and interpersonal relations become more important than ever before. Strong elements of continuing aphasia are characterized by a life-and-death struggle to use and/or understand words. Individuals thus affected, even several years after their brain lesion, still find themselves excluded when they fail to express their thoughts and/or guess the meaning of a conversation. In their struggle for existence they need much more time than they are given to talk and/or to fit the puzzle of their fragmented impressions together. During such circumstances it is impossible to direct interest beyond oneself in order to be involved in something other than a struggle for language. The existential meaning of continuing severe aphasia is thus characterized by alienation and loneliness, leaving the individual to find a balance between a fight filled with agony and giving up in order to avoid further humiliation.

The Second Analysis

Professional Aphasia Care

It seems fair to assume that the most devastating consequences of aphasia could be successfully reduced if the principles for care are based not only upon carers' professional opinions, but also on aphasic persons' experiences of good professional care. The following second interpretative analysis is therefore based on data from the same nine informants as were used in the previous part, with focus now on their statements concerning aphasia care. They talked about care that was provided by aphasia therapists, physicians, registered nurses, nursing aides and physiotherapists. In the findings below all professionals are designated "carers". Seven interpretations that illuminated different aspects of aphasia care are presented, followed by a comprehensive understanding. The quotations are excerpted from the data.

Preventing Isolation

This interpretation describes trust in the patient's competence to participate in caring, because a patient with aphasia can be isolated in different ways. The serious effects of impressive aphasia can make communication extremely difficult, although complementing spoken language with gestures and written notes facilitates understanding, and invites the patients to enter a caring relation.

It is important that the carer writes some words and points to things while talking.
That makes it easier for me to guess the meaning of what she is saying.

With expressive aphasia it is important to continue to talk, even if the patient is unable to reply.

Talk to us! We do understand!

To prevent isolation it is vital to discover how the patient can best take part in interpersonal interplay. Communication can be facilitated by eliminating disturbances such as noise and reducing the number of persons participating in a conversation. It is most essential

to allow the patient sufficient time to concentrate on finding the right words or guessing the meaning of a verbal message. One interviewee with mainly expressive aphasia said:

When I can't find the right word, the other person can become confused. But given time to close my eyes and search for the right word in my head I can do it.

Another interviewee with mainly impulsive aphasia commented:

It is very hard for me to understand when carers are talking. When I finally find out the meaning of a conversation it has already passed. When people are talking at a normal speed I simply have no chance of following the conversation.

The professional carer's adaptability to the patient's competence and contribution to communication, even if it is non-verbal or very hard to understand, must accord with a unique brain lesion, a unique type of aphasia and, most importantly, a unique person. Carers thus need knowledge and proficiency concerning different types of aphasia in order to understand how to make individual adaptations and help the patient to practice language and break down his/her isolation.

Straightforwardness

This interpretation describes trust in the patient's competence to cope with a situation. The interviewees described how they felt when they were ignored because of their impaired use of language.

She [the nurse's aid] put the newspaper on my bed, but didn't say anything. After my aphasia she never talked to me again, and avoided eye contact. I understood that she was afraid. Therefore I also became scared.

Such feelings increase when patients are treated as if they cannot cope with their situation. Implicit assumptions about inability can alienate the patient from the caring situation. The opposite is also the case. Being met with straightforwardness makes it easier to cope with a sense of being trapped inside one's body. Straightforwardness also implies an invitation to enter into a communion where the patient recognises that the carer can – and really wants to – meet with him/her as an individual.

Professional carers ask me if they should supply the right word when an aphasic patient can't find it. I reply that it depends, because we are not all the same. You simply must ask!

This aspect of caring is especially obvious when a carer appears to be uncomfortable with the caring situation or makes light of the problem by saying, for example "you will soon recover", without knowing anything about the severity of the brain lesion.

Today the physiotherapist said that I talked better than on the previous occasion. But on that occasion she said that I talked well.

If any kind of dishonesty is obvious it is natural to become suspicious. An honest invitation to communicate includes opening up in a direct, straightforward and benevolent manner in an effort to understand the patient. Lack of straightforwardness can be a threat to the patient's self-esteem, and if any kind of dishonesty is recognized it is easy to become suspicious. The reverse is also true. A straightforward approach can reduce anxiety about failing to talk or understand.

Provision for Security

This interpretation describes trust in the patient's competence to feel safe with a carer who really wants to understand, because patients with aphasia can be terrified, even horror-stricken, when they become aware of the consequences of their brain lesion. A secure caring base can alleviate such suffering.

A feeling of security makes it easier for the patient to recognise whether the care is based on genuine interest or a wait-and-see policy. When a patient realises that the carer really wants to know and understand, he/she finds it easier to feel safe. Genuine interest implies that the carer is trying to obtain an overall picture of the patient's communication impairment in order to adapt to it. It does not, however, mean that all patients are emotionally ready to face a sudden, unexpected language defect.

It was a shock! The physician pointed at the wall and asked me what it was. The word wasn't there, I couldn't say anything. Nothing was there!

Thus, adaptability that takes each individual patient's reactions into consideration is of vital importance for a secure caring base. It is important to understand when a patient lacks emotional insight into his/her language impairment.

Patients who are not ready to be confronted with their communication impairment can become afraid if the timing of such confrontation is wrong. This kind of awareness on the part of a carer is illuminated by the following statement:

When I arrived in the hospital a nurse talked to me in a warm and calm way. I felt small and helpless. I appreciated her not giving me any information at that moment. She just talked to me in a motherly way.

Recognition of Caring Needs

This interpretation describes trust in the patient's competence to communicate caring needs, because patients with aphasia are vulnerable, as their ability to initiate a dialogue is extremely limited. Professional aphasia care thus includes sufficient time to identify caring needs that are not expressed verbally. It is most important never to allow the patient to feel excluded, isolated and alienated from the caring situation.

To just sit there mute and stupid, with one's head full of more or less brilliant comments, not being able to make use of them is trying; infernally trying and I became very angry.

If caring includes supporting communication when a patient fails to find the right words or cannot answer at all, the risk of exclusion is reduced. It can also be beneficial to slow down

the conversation, complement it with gestures, and help the patient to concentrate by reducing disturbances such as noise.

Yet, the interviewees in the study recalled carers who conversed with each other over their heads. Such attitudes made them feel excluded and humiliated. One interviewee, with expressive aphasia, emphasised:

We can understand what carers are saying and doing although we cannot always give an answer.

Encouraging Efforts to Practice Language

This interpretation describes trust in the patient's competence to regain lost capacities. The interviewees were angry when they recalled carers who did not support their efforts to communicate. Some carers only recommended rest and taking it easy, leaving them to practise words on their own. A librarian, not a carer, understood one interviewee's silent prayer for something to read, and the textbook she provided helped him to recall words. In another case a patient's twelve-year-old grandson made flash cards with letters and words to be used for communicating caring needs. Aphasia care thus includes language practice during caring activities, as indicated by the following:

One nurse continued to talk to me while she helped me to eat and get dressed. She talked as if she knew that I understood, even though I couldn't answer. That made me feel calm and secure and I knew that she would take good care of me.

A carer who encourages efforts to practise language can increase the patient's motivation to communicate, as well as create trust in the carer's ability to understand caring needs. An invitation to practise language indicates that the carer knows that the patient can understand. Several interviewees were critical of carers who did not take on this responsibility. A further aspect of this failure to take responsibility was that professional carers did not inform the authorities about the need for support from the community services.

Equality

This interpretation describes trust in the patient's competence regarding personal interaction. When patients are confronted with their impairment during conversations with carers they can find themselves in a weak position. Inferiority and lost self-esteem remain for the duration of the aphasia.

The worst was not the handicap itself, but my feeling of being disadvantaged.

When carers do not speak to their patients, or converse with each other over the patients' heads, they relinquish the opportunity to create a working alliance to achieve a shared goal, i.e., communication.

It wasn't nice at all when the nursing aid only told me what to do, but otherwise did not speak to me.

No effort should be spared to create an equal working alliance with the patient. In an autobiography, one interviewee contributed the following example highlighting the importance of equality between carer and patient.

If one talks to a patient on the basis of personal experience one may expose one's own weakness. By so doing the carer raises the patient to her own level. She dares to make the patient equal and at the same time relinquishes some of her power. If she divides her strength the patient's strength increases, because he is no longer the only one who is unsuccessful (Tropp-Erblad 2002 p 35).

Supporting the Maintenance of Identity

This interpretation describes trust in the patient's ability to recognize his or her previous competence, as aphasia can include doubts about who you really are. Such doubts not emanate only from the risk of appearing stupid in the eyes of others, but from a deep anxiety about one's cognitive ability.

When the aphasia therapist showed me pictures of the brain I became aware of the fact that I didn't understand as well as before. She also asked me to put a pen in a box but I didn't understand her instruction. Now I really had a reason to be scared.

Expressive aphasia is characterised by failure to make other people aware of one's capacity to think and understand. It is therefore a relief when a carer makes it clear that he or she knows that the patient can think. It is also easier to maintain a sense of being the same person as before when the carer refers to the patient's previous competence.

I couldn't answer, but I think he should have recognised that I understood such matters.

The significance of being aware of the patient's previous competence is also obvious in the following statement. This interviewee is a former physician with severe expressive aphasia. The neurologist told him what had happened by referring to his medical knowledge.

Then I understood that a part of my brain at the back of my head was more or less gone. It can no longer communicate. Perhaps it is possible for that part of the brain to connect to the undamaged areas. Perhaps an undamaged part that is not yet functional can be activated.

This interviewee had extreme difficulty understanding verbal messages, but was nevertheless able to reflect on his chances of rehabilitation by discussing the situation like a physician. The colleague who helped him to understand referred to his professional identity, which helped him to maintain that part of himself.

Adequate Aphasia Care - Comprehensive Understanding

Patients with aphasia know the meaning of language more fundamentally than they ever did before. They know that with aphasia follows existential shortcomings characterized by the loss of almost everything vivid and important connected with interpersonal relations, leaving

them with lost self-esteem, a weak identity and loneliness. A professional carer must thus know how to handle implicit non-verbal questions about who the patient is, as well as feelings of inferiority, frustration and anger.

Trusting the patient's competence while encountering such existential short comings requires a straightforward equal caring relation, which can alleviate inferiority, loneliness and doubts about oneself.

Such encounters are also characterized by the carer's awareness of the patient's possibilities and wishes for support in their efforts to understand and/or to be understood. Adequate professional aphasia care can create a sense of security and community, maintained identity and integrity when the patient is allowed to guide the carers' efforts to discover the best way to practise language.

The most important issue in professional aphasia care is thus to trust the patient's competence while facing existential issues. Such skills can form a secure base that enhances the patient's self-esteem and helps him or her to gain a positive but realistic view of the situation.

The Third Analytic Step

Being Closely Related to a Persons with Aphasia

The third interpretative analysis which follows, is directed towards those closely related to persons with aphasia.

It is based on interviews with seventeen persons with personal experiences of being a spouse, parent or adult son or daughter of a person with severe communication impairments.

The interviewees were encouraged to describe their experiences and their own life situation. Four interpretations emerged, which resulted in a comprehensive understanding that highlights the meaning of being a bridge between a lonely soul and the surrounding world.

Losing Freedom

For close relatives, especially the spouses, communion and cooperation in one's daily life disappear when life abruptly changes after the onset of aphasia. One woman whose husband suffers from severe expressive aphasia says:

I always have to consider the fact that his aphasia makes it frightfully hard for me to be in contact with him, and that leads to loneliness for both of us.

This woman claims to be disabled herself due to her husband's communication impairment. Moreover, he takes her care for granted and is unable to understand that this imprisons them both. Another aphasic man discussed community services without consulting his wife because he wanted her to "take care of everything". Both these women had to take early retirement in order to look after their husbands. Other spouses describe similar dilemmas:

I have to give up what I want to do for myself, because it is a part of the aphasia that they do not want to do anything by themselves, they want company all the time.

He knows what he wants and what he does not want, but I don't exist as a person anymore. He does not understand if I am tired or in pain. No, no, he says if I try to explain. So I am not allowed to have feelings.

I can't give her any responsibility or trust her to do certain things. The whole responsibility lies on my shoulders, in all matters. I often think about the lonely responsibility that makes my life so constrained.

Living with an aphasic person thus means being taken for granted as an informal caregiver, whether or not you have agreed to it. Moreover, none of the interviewees were ever asked by an employee from the community services if they could handle such a situation.

The worst thing that could ever happen to me is to be caught in the situation of being a next-of-kin caregiver after retirement. Worst of all is the humiliation! No one ever asked if they had the right to destroy my life, and that is a deceit on the part of the municipality."

It is devastating always to be restricted by another person's presence, even if it is your husband. You can indeed love a person, but not in a self-sacrificing way. You must have the right to live your own life! This right must be understood by those who decide about community services.

An adult son of a mother with aphasia emphasized the importance of knowledge. He believes that the lack of interest from the community services and political board is due both to a lack of knowledge and to the low status of all illnesses that mostly affect older people. According to him, one manifestation of such an attitude is that aphasia associations rarely receive financial support from the municipality, even when they ask for small contributions. They do not even respond to easy solutions to problems:

Where I live, in my municipality, many computers are written off every week. It would be easy to load them with programs designed for aphasic people and out them in a meeting place for persons with aphasia. But when I suggested that, they were not interested at all.

Thus, the freedom of close relatives to make choices appears to be lost, especially for those living with the aphasic person. Their lost freedom can be interpreted from two different points of view. The first is the aphasic persons' reduced capacity to understand other people. The second, which greatly contributes to having fewer choices, depends on shortages in the community services. This forces relatives to take on the role of informal caregivers, whether or not they have agreed to it. When the French philosopher Paul Ricoeur (1966) considers the voluntary and the involuntary, he emphasizes that only nature is involuntary. It is indeed impossible to escape the consequences of a brain injury. In this study, the close relatives appear to be well aware of the involuntary nature of aphasia, and they accept it. Yet, it is also obvious that the other aspect of constrained options is voluntary limitations as they are caused by people; here shortfalls in community services.

Choices presuppose the possibility of expressing one's wishes, and a sense of freedom depends on one's possibility to say no. If informal caregivers have that possibility, it seems fair to assume that it would increase their capacity to deal with the difficult and challenging life-situation of being closely related to a person with communication impairments.

Staying

The close relatives in the present study, however, did make one important choice: they stayed. They knew that in similar situations, some people, especially spouses, would not. Some of the interviewees had considered divorce or, in some cases, their workmates had suggested it. Nevertheless, they did not find it a solution as it was impossible for them to leave a loved one, even though a future life together seemed to be filled with problems. The choice to stay is even more obvious to those who are a parent or the adult child of an aphasic person. Yet, irrespective of relationship, they all emphasize that aphasia is the worst possible consequence of a brain injury.

Aphasia is the most devilish of all the impairments due to stroke. I can accept that she is bound to a wheelchair, but the loss of the ability to speak is unbearable. I don't even know how she feels about it herself. Some linguistic capacity often returns after a while, but then changes in character and temper may occur. Bad temper is often directed towards those who are closest. One husband puts it this way:

I seem to fuel her anger merely by opening my mouth. She wants to decide everything. She has changed. She came back from her aphasia, but at the same time she did not. Our relationship has become tenser. I think that we would have become closer if she never had that stroke.

One daughter described her mother as formerly a cheerful person, but after a stroke resulting in aphasia, the mother uses bad language.

My mother always liked to joke. Now she is rough; her words are vulgar and she uses bad language. The first word she said after her stroke was a curse word. I feel bad when I hear her talk like that, and I feel sorry for her because I don't think she means it.

A wife described her despair as her husband is angry with her most of the time:

It would never have happened before, that he was angry and irritated with me. Initially I told him how sad I was when he was angry with me, but now I have learned to stay calm.

In order to understand the complexity of a person's choice to stay, it is important to consider the fact that apart from all the frustration, sadness and the heavy burden of responsibility, close relatives know that the aphasic person is helpless without them. Therefore, they try to keep in mind that an aphasic person's loss of empathy with other people's needs, as well as their bad temper, is caused by the brain injury. Consequently, it seems reasonable to understand their choice to stay as a duty. Irrespective of whether the decision to stay concerns spouses or parents or adult children, their motto seems to be, "for better or worse".

The French philosopher Emmanuel Levinas (1972) recognizes the acceptance of other people's right to be different from ourselves as an ethical issue. Such an attitude creates a distance from oneself and one's own problems and opens up a space for demands from the other. The duty to stay has an ethical component, as fundamental ethics mostly concern

interpersonal relations in general and people close to us in particular. Such ethical assumptions make it possible to put the focus on aphasic person's difficult situation rather than one's own problems. Yet, the close relatives in this study did not talk about duty. They talked about love. Their love conquered all temptations to focus on their own life situation. Love made them reject the idea of another life without the heavy burden of being closely related to a person with communication impairments.

My colleagues did advise me to divorce her. Nevertheless, I thought that this was something that had hit both of us, and I still love her."

Creating a New Relationship

The person who once existed is partly lost because of the brain injury, and this loss is certainly recognised by the close relatives. Their sorrow does not merely concern the loss of verbal language but of the whole person.

My dad was always cheerful and chatty. To lose that contact was hard for me.

I try to get in contact with my father, but it always makes me sad because there is only a part of him left.

The contact between my mother and me really changed after her aphasia.

I cried in despair every day the first year. It was a total catastrophe.

Other interpersonal relations, such as those with friends and workmates, dramatically worsen for the affected person. One important part of the close relatives' sad feelings is watching a beloved person's loneliness.

My wife had many friends before she was ill. Now I believe that they were not real friends, because they never visit her. Nevertheless, I think that she thought that she had a rich social life before her brain injury. Now she doesn't seem to care, but I believe that it remains a disillusionment for her.

The initial period of shock and sorrow gradually changes into an insight into the consequences of aphasia. Gradually the sorrow is worked through, and a new form of relationship emerges. Now it is also possible to see small gleams of light.

When you can reach into his consciousness, it is possible to recognize that he is still a man of intelligence.

With the use of words so limited, the close relatives work hard to find new ways to communicate. Their inventiveness is huge; questions and guesses are supplemented with gestures, pictures, special noises etc. Sometimes it is easier to sing than talk. However, all such techniques take a lot of time.

You have to do twice as much in half the time. And you have to be well structured and predictable all the time.

An adult child can be transformed into a parent of his or her own parent after the onset of aphasia. The easiest way out of such a situation can be to concentrate on the practical things that need to be done.

Searching for a new foundation to the relationship can also include new things, such as buying a puppy or listening to music and singing together.

Spouses of aphasic persons spoke of diminished sexual desire, but this did not necessarily mean that their closeness was lost. The longer time spent on understanding each other could in fact lead to a new form of closeness.

We can sit and hold hands for quite a long time. We cry together and he dries his tears with my hand. So our relationship has changed, but not for the worse.

Some alterations in personality can even lead to changes for the better.

My husband cares much more about me than before the aphasia. He was very outgoing before he became ill, and he always wanted to do things with his friends. Now he is keener on me.”

The initial period of chaos and shock is eventually replaced by one of mourning, followed by a period where it is possible to work through the loss of an earlier relationship and adapt to a new one. Various ways to communicate are tried out and concrete solutions to problems emerge.

The loss turns into a commitment to the person who actually exists, with his or her communication impairments and changes in character. From this follows a new sort of relationship and sometimes a new form of closeness. The creative work of building a new relationship varies, and it fluctuates between despair, exhaustion and acceptance.

Yet, there is something that does not vary. The close relatives search for some remaining essence of the aphasic person’s personality. According to the German philosopher Edmund Husserl’s phenomenological philosophy, an essence is described as a structure that makes a phenomenon into that specific phenomenon. This essence illuminates those essential characteristics without which it would not be that particular phenomenon (Dahlberg et.al, 2008), in this case the spouse, parent or adult child who is affected by aphasia. In the close relatives’ efforts to find a beloved person’s essence, they separate the impairments caused by the brain injury from the characteristics they recognize and recall from the time before the injury. Thus, they search for a genuine personality that still exists. If this essence disappears, the beloved person is gone, but this is not true of any of the cases of this study.

Yes, he is emotionally shallow now, but his genuine feelings for me and the children are still there.

I think that her original personality, with a fighting spirit, was a lot of help to her when she started doing things again after her stroke.

The lovely girl whom I always had is still there. She hugs me when she visits us and when she returns to her nursing home.

I am pleased to notice that his strong will is intact, because that makes his life endurable.

The close relatives hold on to this essence when reaching the aphasic person even though verbal communication appears impossible. Hence, their new relationship is built on perceptions of the essence of the person who was there before the aphasia.

Growing Strong Together with Others

As previously mentioned, two wives in the study were forced to quit their jobs, and many close relatives had no time for hobbies. Some of them conceal their problems by erecting a façade in order to avoid putting more strain on the family, as they reject the idea that hardships bring a family closer together. Moreover, they have found that the well-developed welfare system and community services in Sweden are a myth.

When discharged from hospital, the close relatives wrongly took it for granted that community services included access to a speech therapist. They were not informed about the limitations in community services, especially after the retirement age in Sweden, i.e., 65 years. The only exception is a spouse who was lucky enough to be included in a research project.

My husband participated in research and that included a speech therapist three times a week. The speech therapist also talked to me, and it was fantastic to be supported in my communication with him.

Yet, most close relatives in this study were left alone with their fumbling efforts to find new ways to communicate. No professional caregiver ever taught them how to do this. Moreover, socializing with friends or alone also became something of a luxury.

I feel so good when I have the opportunity to exercise and have coffee and a chat with friends. We discuss books, the theatre, lectures, travels. We all laugh and talk a lot.

My dream is to be alone in my own home without the obligations to wait on someone all the time. Or, imagine getting a whole night's sleep!

Under such circumstances, being included in new forms of fellowship with other people in the same situation can compensate for the loss of earlier networks and shortcomings in the community services. Membership of aphasia associations thus turns out to be important and valuable.

In the aphasia association, I meet people who generously share their experiences; this makes me feel very good. It is easier with people in the same situation.

In the aphasia associations, it is easier to take part in activities together with the aphasic persons.

We enjoy travelling with the aphasia association. Such possibilities are worth a lot. Stimulation is really important, and being able to visit other countries gives a lot. Much of that pleasure remains when we return home. We look at photos together and remember many good things.

It is a relief to find people in the same situations who are able to share their experiences. Such fellowships make it possible to create meaningful activities together with the aphasic person and enjoy moments of relaxation with other close relatives. One important aspect of such encounters is the ability to confirm and receive confirmation in terms of vulnerability as well as an unexpected capacity to deal with problems. Moments to oneself, or with others who are able to understand, make it easier to discover one's own hidden resources.

The British psychoanalyst Donald Winnicott (1971) introduced the idea that moments of active relaxation alone or with others constitute a "potential space" which makes it possible to work through thoughts and feelings. He claims a potential space is an area between the internal life (fantasy) and the external world (reality). In the potential space, we have access to both. This makes it possible to reflect on problems and solve them, initially by imagining possible solutions and then by trying to solve the problem in one's mind. Therefore, having a potential space is an important resource for regaining strength. Fellowship with others in the same situation and the chance to be alone some time appear to increase the possibility of growing stronger than could ever be imagined.

I have got a new insight. I think that everyone has much greater resources than they know. Human beings seem to have a kind of preparedness for dealing with difficulties but you are not aware of that until something happens.

Being Closely Related to a Person with Aphasia - Comprehensive Understanding

The four interpretations above illuminate how aphasia affects the daily life of close relatives. Their life fluctuates between feeling imprisoned, when they understand that they cannot count on the community services, and growing more confident of their ability to handle the situation. The way to better self-confidence is paved with setbacks, feelings of powerlessness and despair, but also glimpses of hope.

The first analysis in this study shows how people with aphasia feel empty in their internal worlds with no access to adequate words for their own brainwork. Aspects of the same phenomenon appear to be reflected in the close relatives in this third analysis as they become tied to an aphasic person and lose the opportunities to do things with other people or by themselves. Leaving the aphasic person alone is not an option, because that would mean leaving him or her empty both in internal and external sense. Therefore, they strive to find new things or new ways of doing old things together. During that process, they create a new form of relationship.

Being closely related to an aphasic person thus seems to comprise existential issues, which in turn raise identity questions such as: Who was I before? Who am I now, when my chances to choose my own way of life are gone? What will I be in the future? Will I always be reduced to an informal caregiver?

One tentative explanation for such an identity crisis is that close relatives seem to take on the part of acting as an extension of the aphasic person's body and mind. According to Maurice Merleau-Ponty (1989), our "lived bodies" can be extended by using *things* that

increase our possibilities to participate in the surrounding world. Some well-known examples from that element of Merleau-Ponty's philosophy are a cane or a pen that are experienced as the prolongation of an arm or hand, or music instruments or cars as extensions of one's body.

Merleau-Ponty also stresses that all forms of illness result in changed access to the world because of one's lost abilities and interruptions to harmonic living. This is certainly true when the most important part of the body, i.e., the brain, is struck by illness. Aphasic people find themselves in a situation where it is necessary to rely on others as extensions of their body and mind. Being closely related to an aphasic person consequently includes a tendency to be used as a *thing*, in the sense that Merleau-Ponty suggests or, to put it more concretely, as a bridge between a lonely soul and the surrounding world.

A common denominator in the four themes described above thus concerns new ways of viewing oneself. The close relatives gain an acceptance of their current life-situation, that is beyond their earlier capacity. They decide to stay and continue to serve and love. In doing so, they also make a knowing which gives them confidence in their self-image as a person who does not desert a loved one.

The Synthesizing Analysis

Aphasia Care and Support- a Mutual Concern and a Shared Responsibility

The first part of this study illuminated how a person with aphasia copes with existential loneliness and feelings of alienation in social settings. The possibilities to be part of the communion appear not only to differ according to the type, severity and reversibility of the aphasia itself but also to other persons' wishes and capacity to interact in spite of obvious obstacles to communication. The second part described how professional carers can be of assistance in the struggle to regain communication skills by trusting the patients' competence. The third part was directed to something often neglected, the close relatives who are informal caregivers. The meaning of that was interpreted as being a bridge between a lonely soul and the surrounding world.

Putting one's feelings into words is a well-known psychotherapeutic basis for achieving awareness of one's motives and choices (cf. Blanck and Blanck, 1974). According to Gadamer (1996), words are "food for thought", and humanity would have been unable to construct cultural traditions without the miracle of language. A further important aspect of language was introduced during the 1930s by George Herbert Mead (1934). According to him, human communication is a consequence of role-taking. In order to communicate, every person must be able to assume the role of the other and address him or her in a language that both understand. In other words, we cannot begin to communicate without making assumptions about the internal operation of the mind of the other. Role-taking thus carries with it enormous social and personal benefits. It allows genuine interaction, and permits cooperation and compromise as well as making possible a depth of interpersonal relations that would otherwise be unattainable. This is also important for our capacity to use and understand symbols and signs in accordance with our cultural tradition.

Thus, aphasic people are certainly vulnerable, as their ability to enter into a dialogue on their own initiative can be extremely limited. Therefore, conversation in line with their communication impairment, is essential for their ability to participate in social life. In this process it is important not to conceive of language as a form of adherence to fixed rules. The

real miracle of language is to be found when the aphasic person discovers the meaning in the words of someone else and is able to express meaning themselves.

Many health care theorists also emphasize the power of interaction between a professional caregiver and patient. According to Peplau (1991), a professional carer must also understand his or her own behaviour in order to help patients to understand how their individual disabilities and impairments affect their situation.

Apart from a few studies within healthcare science, reflections on interpersonal relations in the care of patients with aphasia appear to be quite rare. Coping with the most devastating consequences of aphasia seems nevertheless to be related to interpersonal relations. It thus seems reasonable to suppose that inferiority, self-contempt and suspicion can be successfully reduced by means of positive communication, interaction and a sense of community. Thus, a caregiver's capacity to assist in finding that symbols function for communication is of vital importance for patients with continuing aphasia.

Some of the professional carers referred to by the informants in the second part of this study appear to have been able to create a starting point for acceptance and working through the dreadful experience of losing the world of symbols, by trusting and assisting the patient's competence to deal with such losses. One question, however, remains. How can another person know about individual existential issues if the aphasic person cannot put them into words? There seems to be an urgency in pondering whether language has an existential meaning in itself, or if the meaning of language is best understood by those who have experienced losing it?

According to Martin Heidegger's existential philosophy the breakdown of a tool momentarily highlights its presence (i.e., *Being* in Heidegger's terminology) in the "world" in which it exists (Heidegger 1998). If this is the case even with such a fundamental "tool" as language its full meaning is visible to those affected by aphasia, while it is hidden from everyone who has not had such an experience.

This is, however, a poor consolation to those affected. Frustration, anxiety and anger seem to be important aspects of the struggle to regain the capacity to communicate, as they contribute to the disappearance of the illusory initial calmness, thus making room for a fighting spirit. Even those with continuing aphasia appear to be helped by their frustration, as it serves as a driving force that motivates them to practise speech and written language.

But for those closely related, especially spouses, easily awakened frustration and anger can be experienced as frightening personality changes. When the brain injury also includes impairment of the skill to understand and show an interest in other people the strain on close relatives is further increased.

In the first analyse this was exemplified by the aphasic persons' experience of being empty inside their head. Difficulties in improvising thoughts and indulgence in daydreams made them lonely, not only in social settings but also in an internal sense. That, in turn, could increase their need for another person's constant presence.

The same issue was illuminated from another aspect when close relatives were interviewed. Spouses in particular claimed to be trapped without the chance to do anything for and by themselves. They had turned into extensions of the afflicted person's body and mind.

Yet, such consequences of the brain damage were not the most frustrating part of the close relatives' lost freedom, which was the lack of support from community services. Hence, there are consequences to being closely related to an aphasic person that appear to be

unnecessary; they depend on an insufficient community service. If close relatives' fundamental rights to decide how to manage their own lives are attended to, it will probably enhance their ability to assist a family member with communication impairments. It is therefore important in providing professional help to include issues concerning how to balance their responsibility against the responsibility of professional carers and community service.

It is thus reasonable to conclude that aphasia management practice, in the long run has to be a shared responsibility. Principles for this can be outlined under the following headings:

- The first task is to provide the aphasic person with a secure base, consisting of *both* professional support and informal caregiving of close relatives. The secure base can form the starting point for exploring possibilities for interpersonal communication with help from a trusted companion who continues to talk even when answers are lacking.
- The second task is to encourage the aphasic person to consider how current perceptions and expectations can make room for a fighting spirit. Some require time, while others immediately start searching for a way out of their verbal prison. For the first group the spirit can be even more paralysed than the body, but for all it is extremely urgent to prevent further isolation that will make them withdraw even more.
- The third task is to assist the aphasic person by encouraging their efforts to talk about things that really matter. If encouraged to express personal reactions and feelings, such as frustration and anger, they may find it easier to maintain integrity and identity. Others must not take rejections personally. When an aphasic person is angry the professional caregiver or the close relative has an opportunity to practice stepping back and analysing the situation.
- The fourth task concerns the importance of facilitating communication by helping nature and simply continuing to talk. During small talk it is important that the aphasic person is given enough time and that other disturbing factors are minimized. It can also be productive to complement words with gestures or written words if it helps to make understanding easier.
- The fifth task is to spare no efforts to understand the aphasic person's existential situation. This requires a reflective stance that makes it possible to find new creative methods to communicate that accord with the different types of aphasia. This is extremely important because regaining the ability to communicate can reduce humiliation and feelings of alienation and loneliness.
- The sixth task is to enable aphasic persons to recognize that theirself-images derive from the painful experience of losing the world of symbols. Inside they are the same as before, and it is important that others show that they recognize this. It is thus important for professional carers and close relatives, as well as personnel from community services, to reflect upon how to help the aphasic person to maintain a clearly defined self, by referring to their previous competence.
- The synthesising step in this study makes it reasonable to suggest that community service should include education in speech training and counselling on how to handle both practical and existential matters. Target groups for such measures are not only

aphasic persons and their close relatives but also the personnel employed by community services to support those families.

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Chapter 91

APHASIA: PHARMACOLOGICAL AND NON PHARMCOLOGICAL MANAGEMENT

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ABSTRACT

From the simplistic explanations of Wernicke's and Broca's, to the latest investigative headways made into the understanding of intricacies involved in the use of the spoken and written words; modern science is still in the process of understanding Aphasias. The use of radiological and pathological diagnostic modalities in the study of language deficits has helped in the recognition of two categories of aphasias. The acute and sub-acute presentations seen mostly in association with cerebrovascular accidents, CNS infections, and head trauma shows involvement of specific parts of the perisylvian language network which is located in the left hemisphere in majority of right as well as left-handed individuals. Based upon the evaluation of spontaneous speech, naming, comprehension, repetition, reading and writing, and diagnostic imaging these aphasias are divided into central aphasias and the disconnection syndromes. The central aphasias, namely Wernicke's and Broca's are due to damage of the two classical, though not anatomically discrete language centers bearing the same names. The disconnection syndromes are a result of damage to areas of the language network other than the classical centers and include Transcortical and Conduction Aphasias among others. The slowly progressive aphasias caused by neurodegenerative diseases are referred to as Primary progressive aphasias (PPA). In order to simplify understanding of these aphasias and thereby help find cures these aphasias have recently been classified into the agrammatic, semantic, and logopenic variants. Management and prognostic issues pertaining exclusively to language disruption are widely studied in the aphasias with actual presentation. The mainstay of treatment is speech and language therapy; however

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some drugs are also showing promise especially when combined with language therapy. In post-stroke aphasic patients there is a strong correlation between initial severity and eventual recovery. Although most improvement occurs in the first few months, late language therapy has also shown benefit. Ongoing research also points to the potential utility of transcranial magnetic and electric stimulation for the treatment of certain aphasias.

INTRODUCTION

Aphasia is an acquired impairment of production or comprehension of language or both resulting from damage to the language network in the brain [1-3]. Beginning in the nineteenth century with the Dax's almost-forgotten theories and Broca's revolutionizing articles, our understanding of normal language and its impairment has come a long way [4, 5]. Although the concept of language centers is still found in clinical literature, it has been widely accepted that these centers are not circumscribed islands but various interconnected parts of the whole language network [6, 7]. In the majority of people, right-handed as well as left-handed (although to a lesser degree) this language network is located in the frontal, temporal and parietal Perisylvian areas of the left cerebral hemisphere [8, 9]. Aphasia secondary to lesions in the right hemisphere in right-handed individuals is rare and referred to as the Crossed aphasia [10]. It is worthy of notice that although impairments in the use of the spoken and written word have been vastly studied, however, the communication using gestures remains relatively less well incorporated into our overall understanding of aphasias [11].

CLASSIFICATION

The radiologic-pathologic correlation of the onset, progression and associated symptomatology of specific deficits in language perception and or production has led to the recognition of two broad but distinct clinical patterns of aphasia. The acute and sub-acute presentations are seen with directly or indirectly demonstrable involvement of specific parts of the left Perisylvian language network. These aphasias may be "central aphasias", resulting from damage to the two famous language centers, namely Wernicke's and Broca's, or the result of damage to areas of the language network other than the classical centers, the latter being termed the "Disconnection syndromes". [12, 13] On the other hand, chronic aphasias caused by neurodegenerative diseases show only atrophic changes on brain imaging and are dealt with under the umbrella term "Primary Progressive Aphasia" (PPA). The classification of PPA into the Agrammatic, Semantic, and Logopenic variants is a recent and important development to streamline efforts for the formulation of diagnostic criteria and management guidelines for this heterogeneous group of disorders [14].

The Classic Aphasias

These aphasias have been studied for over a century now and became the starting point of the intensive and revealing debate and research in the evolving field of the Aphasiology. They include Broca's, Wernicke's, Global, Conduction, Transcortical, Anomic and Subcortical aphasias.

1. Broca's Aphasia

Originally described by the French physician Pierre Broca in 1861, this is primarily a deficit in speech production with relatively preserved language comprehension [7, 15, 16]. Repetition and naming are impaired as well [16]. It must be borne in mind that comprehension is only relatively preserved and this becomes evident when the patient fails to understand long and complex sentences [7, 17].

The deficit in speech production is manifested by varying combinations of reduced phrase length, agrammatic sentence production, impaired melody of speech and decreased words per minute (10 to 15 words per minute compared to the normal rate of 100 to 115 words per minute) [6, 16, 18]. Spontaneous speech displays somewhat better utterance of generally familiar words e.g., *hi* and patients feel relatively better at singing a familiar song than at spontaneous speech [12, 18]. These deficits combine giving rise to the so-called telegraphic speech. In most severe forms there may be absolutely no understandable speech production with only one or few repetitive words or utterances accounting for the whole speech output. The patient is aware of the deficit, and the inability to convey the desired message via normal speech leads to visible consternation displayed by the patient's facial expressions and body gestures [12]. Despite the above mentioned speech output impairments, these patients generally succeed in conveying some part of the desired message, as the words which they do complete are clearly directed towards the specific idea or thought that is meant to be conveyed.

Neurological Damage and Causes

Broca's aphasia results from lesions involving the posterior part of the left Inferior frontal gyrus; this includes the Broca's area (Brodmann areas 44 and 45) and extends into adjacent parts of the Perisylvian frontal and Insular cortices [2, 16, 19].

The most frequent cause of this damage is embolic occlusion of the superior division of the left Middle cerebral artery (MCA) with the most typical neurological symptoms being displayed in the acute phase [19-21]. Other causes include hemorrhagic strokes and cerebral space occupying lesions (e.g., tumors and abscesses) affecting the same cortical areas [12].

Associated Features

As expected of impediments involving the superior division of left MCA, most cases are accompanied by right-sided upper limb and right-sided facial weakness. Damage which is exclusively limited to the Broca's area or some part of it results in purely motor articulatory impairments which have been referred to as Aphemia [2] or Apraxia of speech [16]. Due to its presentation Broca's aphasia has also been referred to as nonfluent, anterior, motor or expressive aphasia [18, 22, 23].

2. Wernicke's Aphasia

Originally described by the German physician Carl Wernicke in 1874, Wernicke's Aphasia refers to a primary deficit in both spoken and written language comprehension with paraphasic, neologistical yet fluent speech output [16, 24, 25]. Naming and repetition are impaired with repetition being as paraphasic and neologistic as spontaneous speech. Reading and writing skills are impaired as well [12].

These deficits in language comprehension and output are manifested by effortless, normally intoned spontaneous speech which is rendered relatively meaningless by excessive function words (pronouns, articles, prepositions etc.), paraphasias or word substitutions which may be full (semantic paraphasias e.g., fork for knife) or partial (phonemic paraphasias e.g., pyramid for pyramid) and utterance of neologisms or bizarre nonwords [2, 16, 18, 23]. These three defects combine giving rise to the so-called jargon speech [26].

These patients are unable to comprehend their own meaningless speech as well as others' speech and are at the same time totally unaware of this inability. In comparison with Broca's aphasia these patients may suffer anxiety but to a much lesser extent. Their frustration seemingly stems from others' inability to understand their speech, the incomprehensibility of which they are unaware of themselves owing to the lack of insight. Wernicke's Aphasia has also been referred to as fluent, posterior, sensory, or receptive aphasia [18, 22, 23].

Neurological Damage and Causes

Wernicke's aphasia results from lesions involving the posterior part of the left Superior temporal gyrus including the classically described Wernicke's area (Brodmann area 22) with damage usually extending into adjacent parts of the Supramarginal and Angular gyri of the left inferior Parietal lobe [26].

The most frequent cause of this damage is infarction of the inferior division of the left Middle cerebral artery (MCA) [16, 19].

Other causes include hemorrhagic strokes, severe head trauma and cerebral space occupying lesions (e.g., tumors and abscesses) affecting the same cortical areas [12, 18]. Wernicke's aphasia has also been reported as an outcome of patients presenting initially with global aphasia [27].

Associated Features

Most cases are accompanied by right homonymous hemianopia or right superior quadrantanopia [12].

3. Global Aphasia

This can be understood as a combination of the upper two aphasias and is characterized by profound involvement of all aspects of language perception and production including comprehension, spontaneous speech, naming, repetition, reading and writing [16].

Neurological Damage and Causes

Global Aphasia results from lesions involving large parts of the left Perisylvian language network including Broca's area, Wernicke's areas and adjacent parts of the inferior parietal lobule [16, 19].

It is usually caused by a large embolic occlusion of the left Less frequent causes include hemorrhagic strokes and cerebral space occupying lesions (e.g., tumors and abscesses) affecting the whole language network [18]. Transient global aphasia is also reported in postictal state, metabolic disturbances like hypoglycemia, hyponatremia and transient reversible stress induced cardiomyopathy. [18, 29, 137]

Associated Features

As expected of large occlusions involving the left MCA most cases are accompanied by right hemiplegia, right facial weakness and right homonymous hemianopia [2, 12].

Global Aphasia without Hemiparesis (GAWH)

This is an interesting uncommon clinical entity in which the patients show global language impairments without any facial and body weakness. GAWH has been reported with multiple embolic occlusions of various branches of the left MCA as well as with single large occlusions. Less frequent causes include hemorrhagic strokes and cerebral metastases affecting the language network [27].

4. Conduction Aphasia

Both Wernicke and Lichtheim hypothesized that the disruption of neuronal connections between the two language centers (Broca's and Wernicke's) would cause a distinct set of symptoms and Wernicke coined the term "Conduction Aphasia" [24, 30, 31] These patients have problems in repetition with meaningful, relatively fluent, slightly paraphasic (phonemic paraphasias [2]) speech with relatively intact comprehension of both spoken and written language [16]. The patient is aware of the problem and makes several attempts at self-correction characteristically, though not universally, producing a pattern termed "conduite d'approche" e.g., "*splant, plant, plants, pants*" for pants [16, 32]. Although naming, reading and writing tasks also disclose impairments, the impairment in repetition is markedly disproportionate.

Neurological Damage and Causes

In line with the earlier theories proposing damage to interconnecting pathways, it was believed that this aphasia is caused by damage to a white matter tract running between Wernicke's and Broca's areas called the Arcuate Fasciculus [33]. However the following considerations have led many specialists to search for other regions complicit in the causation of this aphasia:

- Damage to sites other than the Arcuate fasciculus including the left Superior temporal gyrus and the supramarginal gyrus has been demonstrated in conduction aphasic patients with a degree of consistency [34, 35].
- Multiple reports have been made of cases with repetition defects (one of the hallmarks of Conduction Aphasia) but with lesions sparing the Arcuate fasciculus [36, 37].
- Absence of conduction aphasia in patients with damaged or missing arcuate fasciculus [38, 39].

5. Transcortical Aphasias

Being any one of the sensory, motor and mixed varieties the Transcortical aphasias are characterized by relatively preserved repetition [2, 16]. Originally described by the German physicians Wernicke and Lichtheim, the Transcortical Aphasias were elaborated in detail by Goldstein who also referred to it using the phrase “isolation of the speech area” and traced the origin of the term “Transcortical” to Wernicke [40, 41].

A. Transcortical Motor Aphasia

With the exception of intact repetition, the motor variety is similar to Broca’s aphasia with nonfluent speech output and relatively intact language comprehension [2, 16].

Neurological Damage and Causes

This is most commonly seen in infarcts of the left anterior cerebral artery (ACA) or the left ACA-MCA watershed area which typically damage the regions surrounding Broca’s area thereby sparing or isolating it [16, 42, 43].

Associated Features

Signs which may give a hint towards the occluded portion in appropriate clinical settings include apathy and right sided hemiparesis [44].

B. Transcortical Sensory Aphasia

With the exception of intact repetition, the sensory variety is similar to Wernicke’s aphasia with fluent, paraphasic speech output and impaired comprehension of written and spoken language [2, 16].

Neurological Damage and Causes

This is most commonly seen in infarcts of the left Posterior cerebral artery (PCA) or the left PCA-MCA watershed territory resulting in isolation of Wernicke’s area [45].

Associated Features

Right visual field deficits may be seen in these cases [16].

C. Transcortical Mixed Aphasia

With the exception of intact repetition, this is quite similar to global aphasia [16].

Neurological Damage and Causes

This usually results from multiple emboli occluding the anterior (ACA-MCA) and posterior (PCA-MCA) cerebral watershed areas [46]. Other causes include anoxia and carbon monoxide poisoning [12].

Associated Features

As might be expected this aphasia may be accompanied by right Hemiparesis and/or right hemianopia [16, 46].

6. Anomic Aphasia

While naming difficulties of varying severities form part of the symptom-complex in various aphasias, “Anomic aphasia” is designated when naming of objects, persons, events, and things is selectively impaired, with comprehension, spontaneous speech, repetition, reading and writing skills being preserved [16, 47]. Although pure anomic aphasia is a rare entity interesting phrases like “word-finding difficulties” [48] and “tip-of-the-tongue” [49] situations have been used by experts to describe it. Owing to the specific defect in naming, spontaneous speech is fluent but circumlocutory and paraphasic [47]. The patient is aware of the deficit and shows obvious effort to find the correct words [48].

Neurological Damage and Causes

The part of the language network damaged has not been specifically localized. Different reports showing involvement of the left anterior inferior temporal lobe left middle temporal gyrus, and the left temporo-occipital junction have been made [48-51].

Anomic aphasia has mostly been attributed to head trauma, metabolic encephalopathy, strokes and brain surgery while Herpes simplex encephalitis has also been reported as a rare cause [12, 48].

7. Subcortical Aphasias

Aphasias have traditionally been considered a cortical problem [52]. Therefore the reporting of heterogeneous aphasias, defying the specific patterns described above, in patients suffering from subcortical lesions started an exciting new phase in this remarkable field of aphasiology [53-55].

While the specific role of subcortical structures in speech generation has been acknowledged, there have been studies which strongly raise the possibility that the cortical deficits in the presumed subcortical aphasic patients simply remained undetected due to the lack of modalities like SPECT, PET and advanced MRI at the time of reporting [52, 56-58].

Treatment and Prognosis of Classic Aphasias

While it can be said that much progress has been made in our understanding of aphasias, similar progress may not be claimed in the development of effective treatments for this disorder at this time.

Generally speaking any reversible causes of brain damage or dysfunction should be addressed first and foremost e.g., potential reperfusion of hypoxic brain tissue, treatment of any hypoglycemia or electrolyte imbalance, steroids for cerebral edema or possible surgical removal of any intra- or extra-axial mass lesions etc. Over time the development and co-existence of depression is common and should be regularly evaluated [59, 60]. Upon detection of depression or any other psychiatric illness expert advice and care might be required.

Since about a quarter to a third of stroke survivors suffer from aphasia it would not be surprising to find that aphasia outcomes and treatment approaches have been most widely studied in post-stroke aphasic patients [61, 62].

Various techniques and approaches are being studied and developed by neuroscience researchers, speech pathologists and therapists and neurologists aiming to cure or at least ameliorate this problem to an acceptable functional status.

Only language therapy is the validated treatment at present [63]. Pharmacologic interventions are being rapidly tested and transcranial stimulation (magnetic and electric) remains the least investigated potential treatment option for aphasic patients [64].

Intensive Speech and Language Therapy

Although showing variable effectiveness from highly to minimally effective in different reports, Speech and language therapy remains the mainstay of aphasia treatment [63, 65]. This therapy has especially been shown to be effective in the acute stage of the aphasia, although benefit has also been reported if it is started in the chronic stage [63, 66]. Moreover it has now been established that short-term intense therapy sessions have superior efficacy when compared to spread-out treatment plans [63, 67].

Customization of Therapy

Vascular aphasias present in various different forms varying in the type of disability as well as the severity. Coupling this with the diverse patient population coming from all the socioeconomic strata of society with their different possible minimal functional target levels creates a wide array of factors which have to be considered while instituting speech therapy.

The therapist and neurologist have the tedious task of making treatment regimens that will not only theoretically improve the functional status of the patient but also ensure compliance [68]. It is, therefore, imperative that the therapy be customized to the individual patient's needs, disabilities, motivation level and stamina [69].

Constraint-Induced Aphasia Therapy (CIAT)

As a natural response to this acquired disability aphasic patients adapt to the situation and develop strategies to bypass their deficits and exceedingly try to communicate via use of simplest possible phrases that they can utter or through gestures [70].

Though this is a clear attempt at self-rehabilitation, one harmful consequence of this reaction is the nonuse of all spared language abilities resulting in the actual recovery falling short of its full potential [71]. The aim of CIAT is to help the patient achieve highest levels of potential recovery. As the name indicates CIAT involves intense therapy sessions while minimizing the use of non-verbal communications. This approach seems to be very promising in efficacy as well as cost-effectiveness and needs to be studied at much larger levels [72-74].

Melodic Intonation Therapy

The use of music and singing sessions to improve speech output is being specifically studied in Broca's aphasia patients who demonstrate a lesser loss of singing skills at baseline as compared to spontaneous speech [12].

Pharmacologic Therapy

The manipulation of neurotransmitters in the brain especially in the regions surrounding the lesioned site seems to be a potential area of exploration for possible remedies [75]. However no agent has been unequivocally proven so far to be practically effective and safe in post-stroke aphasic patients [76]. Some drugs which might become useful in the future include:

- Piracetam combined with speech therapy has been shown to improve both speech production and comprehension [77].
- Donepezil is a cholinergic agent which has been shown to give sustained benefit up to six months after discontinuation [78].
- Memantine is an N-methyl-d-aspartate receptor antagonist with a good safety profile and has shown very promising results when combined with the already established CIAT [79].

Prognosis

The deleterious effects of aphasia on the life of the patient are both intensive and extensive. The disruptions caused in the patient's life range from the obvious problems in maintaining interpersonal relationships and meeting professional requirements to overt or covert depression in the patients themselves or in their caregivers [59,80,81]. At least some degree of recovery of language function is shown by a large majority of post-stroke aphasic patients [82]. Regardless of the specific type of aphasia left-handed individuals tend to show better recovery patterns than right-handed people [18] and sparing of Wernicke's area is associated with better outcomes [12].

Although occasional recovery has been shown to occur up to several years after the initial insult, significant spontaneous recovery has been shown to occur mainly within the first three months [78, 83, 84]. This also falls in line with the observation of some experts that maximum treatment benefit is also derived by instituting language therapy early in the course of the impairment [63, 66]. An interesting explanation put forth for this faster early recovery [85] is that the perilesional environment at that time, with its increased growth factor content, presents a promotive milieu for neuronal and synaptic recovery [86, 87].

A strong correlation exists between the severity of the initial insult and eventual recovery in most of the cases [88-90].

Primary Progressive Aphasia (PPA)

Primary Progressive Aphasia (PPA) is a clinical syndrome characterized by progressive language impairment with the conspicuous absence of other cognitive impairments like visuospatial or memory skills for the first two years and presence of only atrophic changes on imaging of the left perisylvian language network [14]. In essence the generalized foci of affected brain tissue dealt with in the classic aphasia are not applicable to PPA, which results

from perpetual neurodegeneration with simultaneous neuronal reorganization in the affected areas [14].

As may also be inferred from the preceding statement PPA is a disease of advanced age [91, 92]. Owing to the continuous increase in life expectancy [93] and its implicit health care cost burden [94], definitive diagnosis and treatment of this entity has become an object of paramount importance for neurological experts as well as health care administrators and policy makers.

PPA has been further categorized into three distinct variants.

1. Agrammatic Variant (PPA-G)

The characteristically encountered problems in this variant include slow spontaneous speech with [14, 95-97]:

- Anomia.
- progressive inability to produce properly structured sentences, the sentences being devoid of the small words (“determiners”) that precede nouns in normal speech, like *the professor, a school, a bit of mustard, that lady*.
- Improper word-order in sentences.

These combined with the initially less obvious decreasing speech fluency lead to considerable disability over time. However, it is noteworthy that even in the advanced stages of the condition there is relative preservation of comprehension. Patients are aware of their language impairment [98-99].

Imaging Characteristics

Following patterns of atrophic changes have been noted:

- In the left posterior inferior frontal gyrus (Broca’s area), Insula, premotor and supplementary motor areas [100].
- A smaller proportion of cases have shown generalized left perisylvian atrophy [101].
- Normal neuroimaging has also been reported [102].

Neuropathology

This is variable, however, histopathology of a number of cases of PPA-G demonstrates patterns consistent with Pick’s disease or corticobasal degeneration (CBD) pathology with neurons containing a microtubule-associated protein tau (MAPT) [102, 103].

Associated Features

Many cases with agrammatic variant of PPA show extra pyramidal features of corticobasal degeneration (CBD) and progressive supranuclear palsy (PSP) [104, 105] e.g., bradykinesia and gaze palsy during the course of the disease. Limb apraxia has also been reported [106].

PPA-G may also be referred to as nonfluent variant PPA (nfvPPA) [91] or Progressive nonfluent aphasia (PNFA) [107].

2. Semantic Variant (PPA-S)

Semantics is the study of meanings of word [108]. Severe progressive anomia is the hall mark of this variant which is a direct consequence of the loss of meanings of words [109]. Patients tend to ask the meanings of words repetitively [110] but lack insight of their impairment [99]. Speech fluency and repetition is preserved. With progression of the semantic deficits, object recognition through sensory inputs other than speech is also impaired leading to inability to recognize smells (olfactory agnosia) [111], and inability to visually recognize objects (visual agnosia) [110] which may eventually lead to disturbance in facial recognition (progressive prosopagnosia) [112].

Imaging Characteristics

Selective atrophic changes affecting the anterior temporal lobes bilaterally, being more severe on the left, are characteristic of PPA-S [113-116].

Neuropathology

Most PPA-S cases have shown the histological picture of ubiquitinated frontotemporal lobar degeneration (FTLD-U) pathology with ubiquitin positive, tau-negative inclusions [117, 118].

Associated Features

PPA-S has a strong association with the behavioral or frontal variant of Frontotemporal (bvFTD) [119, 120]. There is marked disinhibition [121], increased social seeking [120] and extreme changes in food preferences [121] (the food fads [120]) leading at times to weight gain [121].

PPA-S may also be referred to as Semantic variant PPA (svPPA) [100], primary progressive semantic aphasia [122], fluent PPA [123], or temporal variant FrontoTemporal Dementia [124] and was originally named semantic dementia (SD) [125].

3. Logopenic Variant (PPA-L)

This is the most recently recognized variant of PPA [115] and displays some features of both the other variants [126]. Spontaneous speech is slow like PPA-G but unlike it, is free from major agrammatic errors [95]. The naming impairment is less severe than PPA-S, and the meanings of words are not lost [95]. As suggested by preserved repetition of single words and impaired sentence repetition, short-term phonologic memory losses have been hypothesized to be the basic mechanism of aphasia in these patients [127].

Imaging Characteristics

Atrophic changes are seen in superior and middle temporal gyri posteriorly and in the inferior parietal lobule [115]. There have been recent reports of involvement of the left medial temporo-parietal cortex, right temporo-parietal cortex, and left inferior frontal cortex accompanied by corresponding white matter atrophy in these regions as well [127-129].

Neuropathology

PPA-L has been shown to be strongly associated with the Alzheimer's disease (AD) pathology [12].

Associated Features

Behavioral abnormalities like apathy, anxiety, and irritability may be seen [119, 129].

PPA-L may also be referred to as the Logopenic variant PPA (lvPPA) [91], Logopenic Progressive Aphasia (LPA) [115] or progressive mixed aphasia [14, 102, 130].

Treatment and Prognosis of PPA

The clinical utility of speech and language therapy has not been studied enough to warrant the formulation of standard guidelines for PPA, however, a beneficial role does seem probable [131]. Similarly the use of pharmaceutical agents is also only in the early stages of exploration [91], although Memantine has shown to be of potential benefit in the agrammatic variant (PPA-G) [132].

The established interventions include education, counseling and support for the patient and caregivers along with the medical amelioration of associated behavioral symptoms e.g., prescribing Selective Serotonin Reuptake Inhibitors (SSRI) for agitation and food-fads [91, 133].

There is an acute shortage of epidemiological data for PPA [134]. What we do know is that PPA demonstrates a slow yet steady progress in language deterioration [14] which might start out as any one of the three variants but gradually goes on to show a mixed picture with extensive overlap between variants [91]. This deterioration remains confined to the language domain in the initial years but this might be the case for up to ten years [12]. Patients survive for an average of eight to ten years after diagnosis [105, 135] almost invariably dying of other diseases of old age [136].

CONCLUSION

The Aphasias, both classic and progressive, continue to take an enormous toll on human health and functionality. Present research points to the number of potential cures which need to be studied on larger scale over longer periods of time for the development of cost-effective strategies in preventing and curing this debilitating condition. Any breakthrough in developing an effective treatment for one category of aphasia may well be beneficial for other types as well. The treatment, management and understanding of the disease pathophysiology of aphasia remain a challenge in the coming years.

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Chapter 92

INTENSIVE TREATMENT, PHARMACOTHERAPY, TRANSCRANIAL MAGNETIC/ELECTRIC STIMULATION AS POTENTIAL ADJUVANT TREATMENT FOR APHASIA

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ABSTRACT

Aphasia after stroke is a common and disabling symptom, which can recover in the weeks, months or years following brain injury, showing that the adult brain can reorganize to adjust to impaired functions. Standard rehabilitation approaches aim to improve the deficient function through speech and language therapy (SLT). In parallel with increasing knowledge about central nervous system plasticity, different adjuvant interventions have been recently implemented to enhance the outcome of speech and language therapy. One of them consists in increasing the intensity of SLT in order to obtain better recovery. This is achieved for instance with computer-assisted therapy (CAT) or with constraint-induced aphasia therapy (CIAT) approaches.

A second approach tested the combination of a number of drugs with SLT, with the aim to increase its effect. The mechanism thought to underlie enhanced recovery with the addition of specific drugs includes increasing attention and learning through modulation of neurotransmission or restoring metabolic function. Several substances have been assessed, including noradrenergic drugs and drugs acting on the dopaminergic, glutaminergic, gabaergic, and cholinergic systems.

Finally, another, still experimental, intervention in stroke rehabilitation consists of neuromodulation via non-invasive cortical stimulation, e.g., through transcranial magnetic stimulation (TMS) or direct current stimulation (tDCS). These techniques have recently been proposed to potentially endorse functional recovery after stroke through (i) enhancing excitability of the stroke hemisphere or (ii) suppressing the non-stroke

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hemisphere to reduce its potential interference with functional recovery of the stroke hemisphere.

While both treatment intensity and TMS have led to several promising results on efficacy in aphasia rehabilitation, the effect of pharmacotherapy seems to be less straightforward. In the present chapter we will perform a review of recent literature on the effects of these approaches as potential adjuvant to standard SLT in the rehabilitation of aphasia.

ACRONYMS

AAT:	Aachen aphasia test
CAT:	computer-assisted therapy
CIAT:	constraint-induced aphasia therapy
CILT:	constraint-induced language therapy
NMDA:	N-methyl-D-aspartate
PICA:	Porch index of communication ability
RCT:	randomized controlled trial
SLT:	speech and language therapy
rTMS:	repetitive transcranial magnetic stimulation
tDCS:	transcranial direct current stimulation
WAB- AQ:	Western aphasia battery- aphasia quotient

INTRODUCTION

Aphasia can occur in association with a wide range of brain injury and represents a common severe cognitive consequence following stroke as incidence of aphasia in stroke patients has been estimated around 30% (Engelter, Gostynski et al. 2006).

Spontaneous recovery can be expected in the acute phase by reperfusion of partially damaged tissue, resolution of edema, then resolution of diaschisis. In the sub-acute phase, reorganization within undamaged areas has been observed both in perilesional tissues in the left hemisphere and homologue areas in the right hemisphere (Saur and Hartwigsen 2012).

Speech and language therapy (SLT) is a generally accepted treatment modality for aphasia following stroke (Cicerone, Dahlberg et al. 2005). Rehabilitation training with SLT aims to achieve functional reorganization through plasticity in view to enhance functional outcome. However, efficacy and outcome of SLT are not always optimal (Kelly, Brady et al. 2010). That's why research still needs to address which conditions allow to optimize SLT and its outcome. In the present chapter we will briefly review SLT conditions known to optimize its efficacy, in particular treatment intensity, before describing an overview of some very different potential adjuvant to SLT, namely computer assisted treatment, pharmacotherapy and transcranial magnetic or electric stimulation.

LEARNING AND PLASTICITY

As a matter of fact neural plasticity that supports learning in healthy subjects is also the adaptive mechanism which allows reorganization to restore or compensate lost functions (“relearning”).

Neural plasticity includes molecular modifications (e.g., changes in gene expression), cellular modifications (for example dendritic growth), synaptic modification (synaptogenesis, increased synaptic responses, long term potentiation), circuit modification with reorganization of representation (cortical map reorganization) and finally change in activation patterns-neural connectivity (Raymer, Beeson et al. 2008), (Kleim and Jones 2008).

Acknowledging the diversity of these underlying processes is important because of their direct implication in rehabilitation. We will briefly mention a few of them.

1. Lack of activation of specific neuronal circuits leads to synaptic weaknesses and it constitutes the basis of the “learned non use”. The typical example is a patient with arm paresis who avoids using it, preferring the unaffected arm. A specific intervention has been suggested to avoid “learned non use” in the motor domain, namely “constraint induce therapy”, first developed by Taub and colleagues (Taub, Uswatte et al. 1999) which consists of restraining the unaffected limb to limit its use and a training program for the affected limb. Similarly, a patient with aphasia might avoid verbal communication, replacing it with gestures and pointing or restricting verbal communication to a limited set of utterances. The aim of this kind of intervention in the language domain would be therefore to force the patient to use all his residual language skills (constraint induced aphasia therapy (CIAT), (Pulvermuller, Neininger et al. 2001).
2. It is arguable that treatment focused on one particular aspect of language would have a different result according to the SLT approach (Thompson 2000). The lack of generalization to untreated items (treatment specificity) has been shown in various treatment studies and in particular in anomia studies, where the improvement in naming is restricted to the treated items (Laganaro, Di Pietro et al. 2006). The number and the choice of treated items are therefore important.
3. There is some evidence that action and perception systems co activate with the language system. For example reading action verbs activated a somatotopic pattern within premotor and motor cortex (Hauk, Johnsrude et al. 2004). Because of this interaction, relevant context may possibly facilitate language processes (Pulvermuller and Berthier 2008).
4. Salience is important: the more the stimulus has salient “weight” for the subjects (for example in animal model stimuli allowing reception of a reward), the easier it is encoded. The basal forebrain cholinergic system probably contributes to saliency (Kleim and Jones 2008) and cortical plasticity (Conner, Chiba et al. 2005) and has lead to the introduction of pharmacological treatment based on anti cholinesterase drugs. Moreover, dopamine, seems to mediate the incentive salience of a reward and plays a role in motivation (Berridge and Robinson 1998).
5. Finally learning is driven by correlation. The more frequently a neuronal circuit is activated in a synchronous manner, greater the synaptic strengths. The importance of

intense (quantity) and high frequency treatment for aphasia is derived from these underlying learning processes (Berthier and Pulvermuller 2011) and it is discussed below.

In sum, a series of neurobiological mechanisms contribute to brain plasticity and relearning. Efficient SLT may rely on some of them more specifically; alternatively, some adjuvant treatments may improve the effects of SLT by priming or optimizing the underlying neurobiological mechanisms.

TREATMENT INTENSITY

As mentioned above, based on the way repetition strengthens synapses, treatment intensity seems to have a critical impact on recovery.

As a matter of fact in a meta analysis including published research between 1975-2002 (Bhogal, Teasell et al. 2003), the authors concluded on no effect of SLT in studies in which 2 hours weekly sessions of SLT were provided over a period of 22, 9 weeks, whereas significant effects of SLT were observed when an average of 8,8 hours of weekly therapy was provided over 11, 2 weeks. Not only the total number of therapy hours but also the number of weekly sessions (“massed practice”) was significantly correlated to greater improvement on language assessment tests (Bhogal, Teasell et al. 2003). A systematic review of the Cochrane group including 30 trials between 1966 to April 2009 also found consistent evidence in favor of effectiveness of intensive SLT (Kelly, Brady et al. 2010), although Cherney and colleagues make more cautious conclusions in an another systematic review (Cherney, Patterson et al. 2011).

Furthermore, treatment intensity can be modulated not only by increasing the total number of SLT session but also in terms of number of treated items and item repetition (drill) during therapy and finally in terms of massed practice, namely sessions grouped over a short period rather than distributed over a longer time period. Increasing SLT intensity is not always possible due to a series of limitations in the health-care system (manly due to costs), but there are a few alternative/adjuvant ways to increase treatment intensity. Among these methods constraint-induced aphasia therapy (CIAT) and computer-assisted therapy (CAT) will be presented in the following section.

CONSTRAINT-INDUCED APHASIA THERAPY

In constraint-induced aphasia therapy (CIAT) (Pulvermuller, Neininger et al. 2001) intense massed practice is combined with forced verbal language use. It consists of a therapeutic game activity carried out in small groups of aphasic patients with a therapist. The “game” is played with a set of cards with pictures on it, including two identical copies of each card. The task is to explicitly request the second card from another player. All requests have to be performed with verbal language. Shaping is performed by new explicit rules including the requirement to use the name of the co-players, politeness formulas, determiners, and so on.

In a randomized controlled trial Pulvermüller et al. compared two groups of chronic aphasic patients with the same amount of treatment but either massed over 10 days of 3 hour sessions of CIAT, or 4 week of conventional therapy. Significant improvement on 3 different clinical tests (naming, comprehension, Token test scores) was reported in the CIAT group and limited improvement in the control group. In addition, improvement in everyday communication was only observed in the CIAT group, (Pulvermüller, Neining et al. 2001).

Further studies replicated the efficacy of CIAT (30 hours of training over 10 days) to improve language function in a larger sample of chronic aphasic patient (27) and results were stable at a 6 month follow up assessment (Meinzer, Djundja et al. 2005).

Maher and colleagues compared constraint-induced language therapy (CILT) defined as limiting the response only to spoken verbal production with promoting aphasic communicative effectiveness (PACE) therapy allowing all modes of communication, in a dual card game. Both groups received the same amount of therapy (3 hours, 4 days a week during 2 weeks) but they were not randomized. Positive results were observed in both groups but there was more consistent improvement in the CILT group on standard measures and on some aspects of narrative discourse (Maher, Kendall et al. 2006) showing that intensity is not the only important factor.

In a review of 10 studies (Cherney, Patterson et al. 2008) and in a recent review (Meinzer, Rodriguez et al. 2012) the authors conclude that there is indeed evidence of beneficial effects of CIAT on language functions. However, the reviews also outlined that the relative contribution of each of the aspects of CIAT (particularly massed practice and constraint verbal use) need to be further investigated (Meinzer, Rodriguez et al. 2012). Other studies concluded to limited effects of CIAT which were not maintained 3 months after treatment (Farooqi-Shah and Virion 2009).

COMPUTER ASSISTED THERAPY

An alternative way of increasing treatment intensity is implementing computer assisted therapy (CAT). CAT has several practical advantages for SLT, ranging from the possibility of increasing treatment intensity in terms of number of sessions and drill to a larger involvement of patient in therapy with increased autonomy and the possibility of controlling several parameters of stimuli presentation and feed-back.

CAT has been introduced since the 1980s in aphasia treatment, but a first review published in 1990 concluded that these first attempts did not prove its efficacy (Robertson 1990). In later years an increased number of studies have investigated the efficacy of CAT. As for other SLT approaches, most CAT studies targeted anomia treatment in aphasic patients (Fink, Brecher et al. 2002), (Laganaro, Di Pietro et al. 2003), (Pedersen, Vinter et al. 2001) and a few of them targeted other domains such as sentence comprehension (Crerar, Ellis et al. 1996), agraphia (Mortley, Enderby et al. 2001) and alexia (Laganaro and Overton Venet 2001). As a consequence, a second review on CAT published in 2004 concluded that several studies have proved the efficacy of CAT when specific linguistic domains are targeted (Wertz and Katz 2004). CAT studies have been shown to improve recovery from aphasia in chronic patients, but also in studies carried out with patients in the post-acute stage. In the latter studies, CAT sessions have been added to standard SLT sessions (Laganaro, Di Pietro et al.

2006). As a consequence, CAT allowed increasing treatment intensity from one to two daily sessions. Alternatively, CAT can also be delivered at home (Mortley, Wade et al. 2004), also allowing high intensity treatment. As an example, in a single patient study by Laganaro and Overton (2003), the patient worked at home daily on average 70 minutes during 3 weeks on a CAT for alexia. Finally, CAT enables intensity in terms of increased item-repetition (drill), which is also an essential condition for (re-)learning (see above). In a study on CAT for anomia, each of the 8 patients who received CAT with the same program repeated each item the number of times they estimated necessary, which varied from 5 to 21 times (Laganaro, Di Pietro et al. 2006a); in another study including patients presenting with similar anomia severity at baseline, each of the 3 patients achieved 85% of accuracy after a number of sessions varying from simple to double (Laganaro, Di Pietro et al. 2006b). These two examples illustrate how CAT also enables the adaptation of treatment intensity in terms of drill and of number of sessions for individual patients.

PHARMACOLOGICAL TREATMENT

Rationale for pharmacological treatment of aphasia is based mostly on two purposes: strengthening neural activity in networks mediating attention, word learning and memory and reestablishing the activity of neurotransmitters in dysfunctional brain region (Berthier, Pulvermuller et al. 2011).

Several substances have been assessed in studies with aphasic patients, including drugs acting on the noradrenergic, dopaminergic, glutaminergic, gabaergic, cholinergic systems. We will briefly review each of these groups of drugs.

Noradrenergic

D-amphetamine (or Dexamphetamine or Dextroamphetamine)

D-amphetamine acts mainly on the noradrenergic and dopaminergic systems and therefore possibly increases general brain excitability. After experimental infarction in rats it enhances neurite growth and synaptogenesis (Stroemer, Kent et al. 1998). Several studies have been published about the effect of amphetamine in combination with physiotherapy in motor recovery with a trend towards greater improvement in the amphetamine group (Sonde and Lökk 2007).

D-amphetamine has been found to enhance language learning in healthy subjects (Breitenstein, Wailke et al. 2004), (Whiting, Chenery et al. 2008). D-amphetamine has also been explored to favor recovery in aphasic patients. A double-blind placebo controlled study has been carried out with 21 stroke aphasic patients in the post-acute stage receiving 10 mg of dextroamphetamine or placebo, 30 min before speech therapy during 5 weeks. The authors reported that amphetamine paired with speech therapy accelerated immediate recovery from aphasia on the Porch Index Communication Ability (PICA), but at 6 months no significant difference was found between the two groups (Walker-Batson, Curtis et al. 2001).

A smaller placebo-controlled, crossover design, shows that 2 chronic aphasic patients correctly named treated items more accurately under amphetamine than under placebo but the gain was statistically significant in only one patient (Whiting, Chenery et al. 2007).

However in clinical practice the administration of amphetamines is limited by the potentially serious side effects notably on blood pressure (Martinsson, Hardemark et al. 2007).

Dopaminergic

Dopamine contributes to synaptic plasticity (including long term potentiation) in different brain areas (hippocampus, striatum and prefrontal cortex) and seems to be a regulator in synaptic changes observed in learning and memory (Jay 2003). Different substances can act on the dopaminergic system, including levodopa (dopaminergic precursor), bromocriptine (dopaminergic agonist), moclobemide (monoamine oxydase inhibitor), and amantadine (dopamine releaser).

Levodopa

Some studies have shown an effect of levodopa on motor learning in young healthy volunteers and elderly subject (Floel, Breitenstein et al. 2005) and in patients following a stroke (Rosser, Heuschmann et al. 2008), (Scheidtmann, Fries et al. 2001). For instance, Levodopa as compared to placebo accelerated and improved word learning in 40 healthy subjects (Knecht, Breitenstein et al. 2004).

In aphasic patients, two randomized double blind placebo-controlled studies reported contradictory results in the acute phase, using similar doses of levodopa (100 mg) during 3 and respectively 2 weeks. In one study with 19 subjects, larger improvement was observed in the patients receiving levodopa than in the placebo group in three subtests of the Boston diagnostic aphasia examination: animal naming (verbal fluency), sentences and words repetition (Seniow, Litwin et al. 2009). By contrast in the other study, involving 12 patients, levodopa did not modulate the amount of improvement obtain with therapy (CAT) (Leemann, Laganaro et al. 2011).

In conclusion the potential effect of levodopa on recovery from aphasia remains controversial, even if it is postulated that disruption of dopamine pathways may play a role in distinctive features of non fluent aphasia (Berthier 2005).

Bromocriptine

A few single and multiple case reports and open label trials using bromocriptine reported improvement in language performance in non fluent chronic aphasic patients: 1 patient increased his naming accuracy and then returned to baseline after discontinuation (Albert, Bachman et al. 1988), 3 out of 7 patients (those with moderate aphasia) showed significant improvement on a lexical index and verbal fluency task, but also only the time the drug was given, (Sabe, Leiguarda et al. 1992), and 4 patients experienced significant increase in word retrieval, followed by a decrease after withdraw (Gold, VanDam et al. 2000).

In a randomized double blind placebo-controlled study on chronic non fluent aphasic patients, bromocriptine combined with SLT improved in particular verbal latency, reading

comprehension, and qualitative measures of spontaneous speech in 5 patients (Bragoni, Altieri et al. 2000). The principal limitation of this study is that many patients were excluded during the recruitment phase (14 out of 25) and there was also a high rate of dropouts (6 of 11) due to secondary effects. Here again the effect on verbal latency was not sustained after wash-out.

Efficacy of bromocriptine in non fluent aphasia was not confirmed in one open label trial (Ozeren, Sarica et al. 1995) and in three randomized double blind placebo-controlled study, as well in the acute phase on 38 patients with maximal dose 10 mg /day (Ashtary, Janghorbani et al. 2006) as in studies carried out in the chronic phase with different doses (Gupta, Mlcoch et al. 1995) (Sabe, Leiguarda et al. 1992). Nevertheless the major limitation of these last two studies is that no SLT was given during the trial period.

In summary bromocriptine in chronic non fluent aphasia, associated with SLT, has a possibly, but not lasting, effect on verbal latencies.

Moclobemide

No difference between moclobemide (daily for 6 months) and placebo has been reported with a large (90 patients) double blind, placebo randomized study, with patients in the acute stage (Laska, von Arbin et al. 2005).

Amantadine

Amantadine increases the release of dopamine and norepinephrine but has also anti cholinergic proprieties and weak antagonism of NMDA receptor (Berthier, Pulvermuller et al. 2011). An open label trial in 4 transcortical motor aphasic patients, using multiple assessments during on –off drug periods suggested that amantadine paired with SLT improves performance in a word generation task (Barrett and Eslinger 2007).

Piracetam (Pyrrolidone Acetamide)

Research on piracetam showed an effect in a variety of neurological disorders with some effects on memory, attention, cognition and depression (Malykh and Sadaie 2010).

The exact mechanism by which piracetam acts to improve these functions is unknown because piracetam is a non-specific pharmacological agent which seems to have a role in energy metabolism, particularly through its effect on cell membrane, a gaba-mimetic action, and its activation of AMPA-type glutamate receptors (Malykh and Sadaie 2010). It enhances also neurotransmission of acetylcholine (Huber 1999),(Berthier and Pulvermuller 2011).

They are many studies using piracetam in the acute phase after stroke including several studies on aphasia. Enderby et al. performed a 12 week, double blind, parallel randomized placebo-controlled study with 158 post stroke patients, including 67 with aphasia. Patients also received SLT although its type and intensity was not mentioned. Higher improvement was reported for the piracetam group relative to the placebo group on several language assessment tests, but these benefits were not maintained 24 weeks later (Enderby, Broeckx et al. 1994).

A very large (N=927 stroke patients) multicenter RCT including a subgroup of aphasic patients evaluated the effectiveness of piracetam provided early after stroke during 12 weeks (De Deyn, De Reuck et al. 1997). Recovery from aphasia was particularly high in the group

of patient treated within 7 hours post onset (Orgogozo 1999),(Huber 1999). However aphasia was not investigated in details but only documented with screening tests.

In a RCT including 66 aphasic patients, piracetam or placebo was associated with SLT during a 6-week period. In the piracetam group a significant effect was reported on the written language subtest of the Aachen aphasia test (AAT) (Huber, Willmes et al. 1997).

In another RCT study involving 24 aphasic patients within 14 days post stroke, piracetam or placebo were also given for 6 weeks in conjunction with SLT. Both groups displayed some improvement in token test, AAT subtest for written language and comprehension but the piracetam group also showed significant improvement in spontaneous speech (Kessler, Thiel et al. 2000). On the other hand there was no clear beneficial effect of piracetam in a RCT of 49 aphasic patients receiving 4800 mg of piracetam or placebo during 6 months. However, there was no intensive SLT associated to pharmacotherapy in this study and only 30 of the 49 patients were finally analyzed (Gungor, Terzi et al. 2011).

In sum, piracetam seems to be an effective treatment of aphasia in combination with SLT when given in the acute phase post stroke and has a low incidence of mild adverse events (Noble and Benfield 1998).

Glutaminergic

Glutaminergic over activation of N methyl D aspartate (NMDA) receptors results in intercellular calcium overload, causing some neuronal dysfunction and death. Therefore one of the rational to use N methyl D aspartate (NMDA) glutamate receptor antagonist is the expected neuroprotective effect. Memantine, a NMDA receptor antagonist versus placebo has been investigated in a RCT with 27 chronic post stroke aphasic patients. The memantine group displayed higher improvement than the placebo group and recovery was even greater when speech therapy CIAT was added (Berthier, Green et al. 2009).

On the other hand, recently it has been demonstrated that hyper activation of NMDA is then followed by prolonged decrease in NMDA function. Thus perhaps stimulation –and not antagonism- of NMDA could be useful (Dhawan, Benveniste et al. 2011).

Cholinergic

On the basis of the role of the basal forebrain cholinergic system in motor learning and memory (Conner, Culbertson et al. 2003), in saliency (Kleim and Jones 2008) and based on the experience with Alzheimer disease (Hansen, Gartlehner et al. 2008) different cholinesterase inhibitors have been tried with aphasic patients (Berthier, Pulvermuller et al. 2011).

In an open label study cholinergic agent donepezil was administered to 11 chronic post stroke aphasic patients: improved performance on the WAB-AQ was reported after 4 and 16 weeks but then declined with washout (Berthier, Hinojosa et al. 2003).

In another small open label study of 4 patients, the 2 patients receiving bifemelane increased their language scores (Tanaka, Miyazaki et al. 1997).

A double-blind, RCT combining donepezil versus placebo and SLT in 26 chronic aphasic patients, also showed a significant benefit of the donepezil group on language and communication measures (Berthier, Green et al. 2006).

Gabaergic

There is an anecdotic report of a chronic aphasic woman who improved transiently but, repetitively and dramatically her speech after zolpidem, an agonist of GABA receptor (Cohen, Chaaban et al. 2004).

In conclusion, despite evidence from basic science that certain drugs can promote plasticity, pharmacological intervention in aphasia has not conclusively proved its effectiveness; this is due mainly to poor study design, including patients with different types of aphasia and not using or describing homogeneous SLT associated with pharmacotherapy.

The time window of drug administration after stroke is probably important: in the acute phase preference would be given to drugs with neuroprotective effect or with the potential to reestablish metabolic function whereas in the chronic phase preference would be given to drugs improving learning. Also, it seems that drugs should be given in association with SLT in view to obtain synergy between drug and behavioral therapies.

TRANSCRANIAL MAGNETIC AND DIRECT CURRENT STIMULATION

Another approach to SLT consists of favoring neuromodulation with transcranial brain stimulation. This kind of intervention has been carried out using non-invasive stimulation, such as transcranial magnetic or direct current stimulation. Although this kind of approach is still experimental at least regarding therapy for aphasia, a few studies have proposed transcranial stimulation with stroke patients either to suppress the potential inhibitory effect of the contra-lateral hemisphere or to enhance the excitability of perilesional areas. Here we will briefly review the outcome of studies using transcranial magnetic stimulation (TMS) or direct current stimulation (DCS) with aphasic participants.

TRANSCRANIAL MAGNETIC STIMULATION (TMS)

TMS is a non invasive technique consisting of a brief pulse of current flowing through a coil of wire and generating a magnetic field, which induces a physiological response in targeted brain regions. TMS applied repetitively (rTMS) can either inhibit or excite cortical activity depending on its frequency and intensity. Brain stimulation is used to increase cortical excitability aimed at facilitating long term potentiation like processes; inhibition is applied to the contralesional hemisphere in the aim to facilitate the ipsilesional hemisphere activity.

As excitatory high frequency TMS has safety issues in stroke patients (Tassinari, Cincotta et al. 2003), TMS has been applied mainly at low frequencies (1Hz) in order to disrupt locally cortical activity at right hemisphere areas potentially interfering with recovery in aphasic patients.

Preliminary experiments applied rTMS to suppress the unaffected right hemisphere in a small group of non-fluent aphasic patients (Martin, Naeser et al. 2004). These studies showed improvement in specific language production tasks, in particular when stimulation targeted the right Broca homologue area. The effects persisted two months after a 10 day treatment. The benefit in recovery has been assigned to a release of the affected left hemisphere from right hemispheric inhibition (Pascual-Leone, Amedi et al. 2005), (Bolognini, Pascual-Leone et al. 2009). Crucially, in the study by Naeser et al. improvement was observed only after stimulation of the right Broca homologue area, not after stimulation of right temporal areas. However, other studies have shown differential effects on a picture naming tasks when suppressing the right pars triangularis versus the right pars opercularis of the inferior frontal lobe (Naeser, Martin et al. 2011) or facilitative effects when excitatory stimulation was applied to these areas (Winhuisen, Thiel et al. 2005), suggesting a right hemispheric contribution to language recovery and questioning the general applicability of the inhibitory TMS approach (Turkeltaub, Coslett et al. 2011).

DIRECT CURRENT STIMULATION

Transcranial direct current stimulation (tDCS) is also a non-invasive brain polarisation technique that modulates the cortical excitability using weak direct currents. Depending on the polarity of the direct current (anodal vs. cathodal) it increases or decreases brain excitability. Although its spatial and temporal resolution is lower than TMS, it is often preferred because it is safer and easier to use than TMS. In a few studies anodal tDCS applied to left perilesional areas showed positive effects on accuracy and latencies in picture naming tasks (Baker, Rorden et al. 2010), (Fridriksson, Richardson et al. 2011). Fridriksson et al. (2011) applied anodal tDCS to left perilesional areas in association with computer-assisted therapy (CAT) sessions for anomia in eight chronic aphasic patients. They reported a decrease in production latencies relative to CAT sessions without tDCS. However, improvement has also been reported immediately after 10 minutes of tDCS without associated SLT (Monti, Cogiamanian et al. 2008). In this study cathodal tDCS applied to the left fronto-temporal areas in chronic non-fluent patients increased picture naming accuracy. The authors interpreted these results as an effect of decreased excitability of abnormal cortical inhibitory circuits. Alternatively, tDCS was applied to the right inferior frontal cortex (Vines, Norton et al. 2011). The authors investigated the effects of anodal tDCS in six chronic patients with non-fluent aphasia. tDCS stimulation was associated with three sessions of melodic intonation therapy. They reported greater improvement after the anodal tDCS relative to the therapy sessions without tDCS (sham).

In sum, both TMS and tDCS studies have shown some promising results in inducing long-lasting plastic changes and recovery in aphasic patients. So far, most studies have been conducted with chronic aphasic patients. At present however it is far from clear which brain areas should be targeted with excitatory vs. inhibitory stimulation. Actually, the type of SLT

associated with cortical magnetic or electric stimulation or even inter-individual variability may modulate the choice of the targeted brain area, and this approach clearly needs additional empirical evidence before an extended application in clinical practice.

CONCLUSION

The basic knowledge of brain plasticity has grown but the exact mechanisms underlying recovery from aphasia are for the moment not fully understood and are a limit for the development of therapeutic option.

However today with certain evidence, a few recommendations can be retained.

The current practice of spreading SLT over a long period should be modified and short intensive treatment (massed practice) is preferred. There are a few methods which are indicated to increase treatment intensity: we have reviewed two of them: CIAT and CAT. These two treatment approaches have proved their efficacy and are certainly good candidates to address the issue of providing intensive treatment without increasing health costs. In all cases treated items in SLT should be chosen carefully because of the lack of generalization to untreated linguistic material and structures and the importance of having a relevant treatment.

Other approaches have emerged to facilitate neural plasticity and therefore improved treatment effects or recovery. Despite some encouraging results, these techniques still need to prove their efficacy. Importantly, if pharmacological or brain stimulation approaches are used, they should be coupled with adequate SLT, as they probably prime (re)learning, and learning cannot be achieved without training.

In sum, clinical practice has evolved during the past 20 years in several different directions to optimize SLT and its outcome; but most of these options still need to be better defined and developed.

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Chapter 93

DIAGNOSIS AND MANAGEMENT OF LANGUAGE IMPAIRMENT IN ACUTE STROKE

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ABSTRACT

Language impairments are frequent in stroke, especially in the hyper acute phase, occurring in 15 to 50% of stroke patients. Recovery from aphasia remains difficult to predict. Language impairment still exists in at least 50% of initially aphasic patients one year after stroke. Post-stroke aphasia is a major source of disability that can lead to impaired communication, reduced social activities, depression and a decreased likelihood of resuming work. The role of the stroke unit in improving morbidity, mortality and recovery has been clearly demonstrated. Nevertheless, the need for intense and sustained acute management of aphasia in specialized stroke units remains controversial. The recent validation of a tool to rapidly screen for aphasia (LAST) after stroke allows for its early detection and management. Early detection of aphasia after stroke may improve outcomes by taking advantage of the synergy between intensive speech therapy and early neural reorganization. Daily re-evaluation will facilitate tailored rehabilitation sessions, multidisciplinary management by the stroke team, and development of educational resources for patients and their caregivers. Standardizing protocols for identifying and managing aphasia requires the co-operation and coordination of the entire stroke team, along with the daily presence of speech therapists. These considerations are crucial for patients in the stroke unit to achieve the full benefit of the management proposed in this chapter, to ultimately promote better long term functional prognosis.

INTRODUCTION

Stroke is a public health issue, representing the third leading cause of death and the first leading cause of disability in adults [1] in the western world. As the population ages, its estimated incidence of 300 to 500/100 000 is expected to increase [2]. Specialized stroke units and/or stroke teams have been created worldwide in order to provide optimized management of stroke in the hyper acute and acute stages. Recent randomized controlled trials (RCT) have proven the efficiency of specialized stroke units in reducing morbidity and mortality, and in facilitating rapid recuperation after stroke [3-6]. Aphasia is a frequent symptom of acute stroke, and a major source of disability. It incurs increased cost of care [7] and has negative economic repercussions, such as decreased return to work [8, 9]. However, early intense and sustained management of aphasia in stroke units remains controversial.

We share herein our experience of the early identification and treatment of aphasia after stroke, based primarily on a neurolinguistic framework.

We further describe existing protocols and discuss the expected benefits of early management. Optimal standardization of aphasia management can be achieved in stroke units with collaboration among physicians, nurses and speech therapists, resulting in improved outcomes after stroke. Moreover, clinically-driven research in aphasia in the acute setting is feasible and essential to improving recovery and rehabilitation outcomes.

1. IMPAIRMENTS IN THE ACUTE PHASE OF STROKE: GENERALITIES

Survivors of stroke often experience multiple co-occurring impairments, such as hemiplegia [10, 11] dysphagia [12, 13], incontinence [14, 15] depression [16], cognitive changes [17, 18], dysarthria [19, 20] and/or language impairment [21, 22]. Second to hemiparesis, dysphagia, dysarthria, and language impairment are the most frequent [20]. The incidence of dysphagia approximates 55% in the acute stage [12, 13].

Dysarthria and language impairment are almost as frequent in the acute phase of stroke, occurring in approximatively one-third of all stroke patients. Nonetheless, these impairments are probably underestimated, particularly in the hyper acute stage, given the lack of standardized assessments and the potential for rapid recovery [21, 23-25]. Dysarthria may occur as isolated speech impairment or with concomitant aphasia. Studies have reported dysarthria to range from 8 [26] to 42% [19] and aphasia to range from 15 [24] to 41% [12] following stroke.

Inclusion of different stroke etiologies, first versus recurrent stroke patients and different methodologies likely contributes to variations in reported frequencies of language impairment.

1.1. Definitions

Stroke is usually defined as a sudden onset of signs of focal disturbance of cerebral function lasting over 24 hours [27]. Language impairment literature can relate to ischemic, intracerebral hemorrhage (ICH) or subarachnoid hemorrhage (SAH) stroke etiologies.

Among stroke subtypes, ischemic etiology is the most frequent cause of stroke, followed by ICH and then SAH [28-30]. While there is typically an abrupt onset of neurological deficit after ischemic stroke, a progressive evolution, often with considerable tissue displacement [31], can also exist after ICH [26]. In addition, there is as much as a 10 fold higher frequency of decreased level of consciousness after ICH compared to ischemic stroke [26]. Consequently, aphasia can be identified very early after ischemic stroke, while patients with ICH may require ongoing monitoring for adequate identification of its presence. After ischemic stroke, some patients may fully recover from aphasia within days of stroke onset [24], thereby warranting careful monitoring for early recovery. Aphasia and other focal neurological deficits are not generally expected to occur after SAH, except occasionally as transient signs of vasospasm [30], or after aneurysm clipping [32].

Aphasia or language impairment is defined as an acquired impairment, characterized by anomia [33] and/or other deficits in expressive or receptive language, evidenced in any modality: speaking, listening, reading, or writing [34]. We use a neurolinguistic framework to describe brain behavior relationships in the identification and management of language impairment after stroke. (Figure 1)

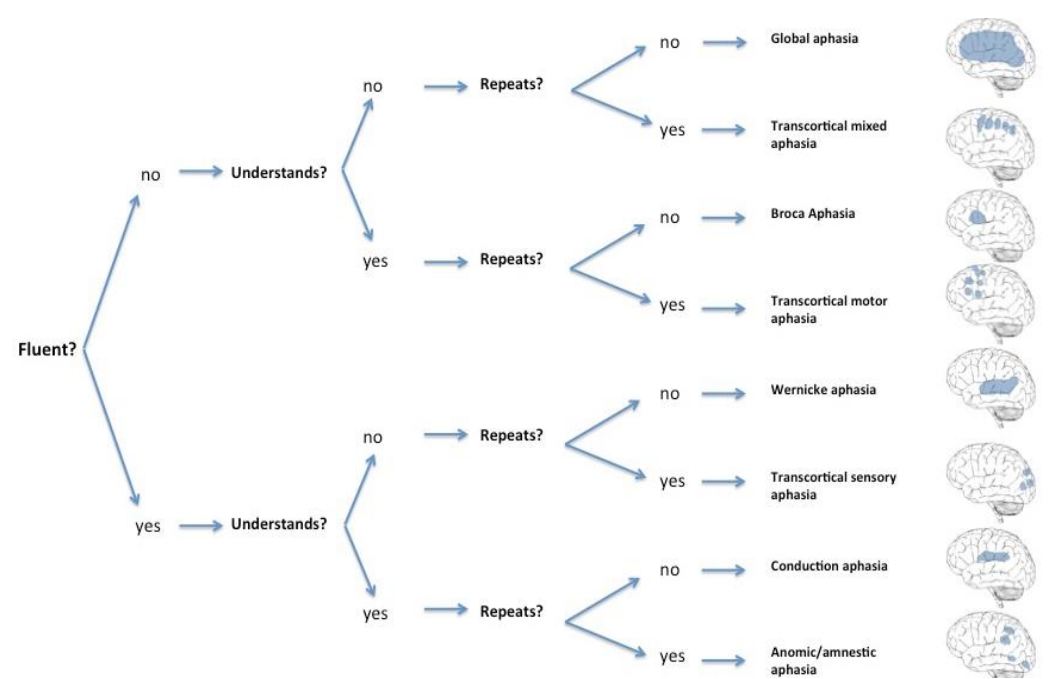


Figure 1. Decision-making tree in aphasic patients.

1.2. Incidence, Predictors and Phenotypes of Language Impairment

Aphasia results from injury to the dominant hemisphere, which involves the left hemisphere in right-handed patients and in 70% of left-handed patients [35, 36].

Table 1. Frequency of Acute Aphasia according Stroke Etiology, by increasing frequency

Study	Frequency %	Sample n	Assessing Health Professional
MIXED ETIOLOGIES			
All Etiologies			
Hilari* (2011)	17	12	unclear
Hier et al* (1994)	21	1805	neurologist
Inzitari et al (1998)	22	339	physician
Kumral et al* ^b (1988)	23	2000	neurologist
Kyrozis et al* (2009)	23	555	physician
Lawrence et al* (2001)	23	1259	physician
Bersano et al (2009)	28	8848	neurologist
Stegmayr et al* (1994)	30	3542	medical staff
Sturmer et al ^b (2002)	31	270	physician
Dickey et al ^c (2010)	35	3207	stroke care team or CNS
ISCH and ICH			
Hier et al (1994)	23	1510	neurologist
Croquelois & Bogousslavsky* (2011)	26	5880	physician
Hilari* (2011)	33	96	unclear
Laska et al (2001)	33	106	SLT
Bogousslavsky et al* (1998)	34	1000	unclear
Guyonard et al ^d (2009)	41	2983	physician or nurse
ICH and SAH			
Hier et al* (1994)	9	490	neurologist
Sturmer et al (2002)	20	50	physician
ISOLATED ETIOLOGIES			
ICH			
Bahou ^e (2009)	15	100	physician
Hier et al (1994)	16	237	neurologist
Croquelois & Bogousslavsky* (2011)	26	647	physician
Bersano et al (2009)	32	1009	neurologist
Guyonard et al (2009)	36	314	physician or nurse
SAH			
Hier et al* (1994)	3	243	neurologist
Anderson et al ^f (2006)	12	868	neuropsychologist
ISCH			
Inatomi et al ^g (2008)	15	835	neurologist or SLT
Lubart et al* ^h (2005)	23	140	neurologist
Hier et al (1994)	24	1273	neurologist
Croquelois & Bogousslavsky* (2011)	26	5233	physician
Engelter et al* (2006)	30	269	neurologist
Sturmer et al ^b (2002)	34	220	physician
Hilari* (2011)	39	76	unclear
Guyonard et al (2009)	40	2318	physician or nurse

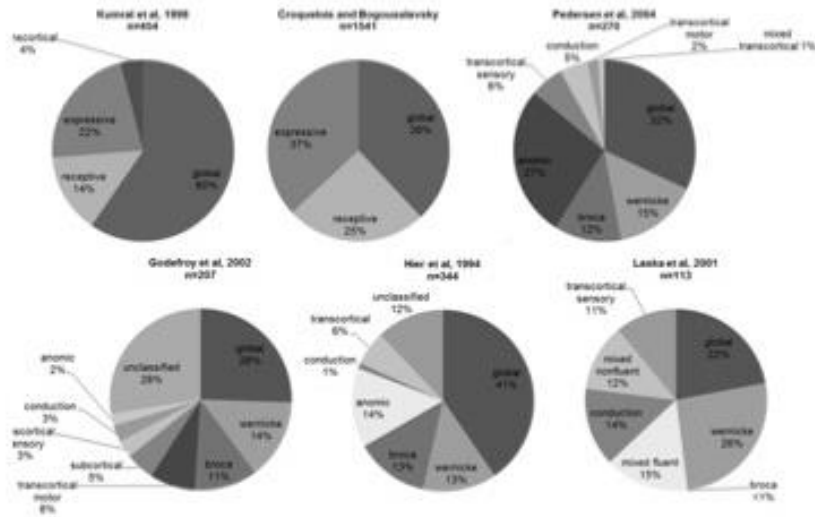
CNS= Canadian Neurological Scale.; ICH=Intracerebral Haemorrhage; ISCH=Ischemic Etiology; SAH=Subarachnoid Haemorrhage

SLT=Speech Language Therapist; * first ever stroke.; (a)proportion of SAH higher than that of ICH.; (b)TIA included in ischemic category.(c)35% incidence documented at discharge, compared to 30% very early after stroke;(d)included ISCH, ICH, and undetermined etiology;(e)Excluded cerebral trauma as cause of ICH;(f)Used a cueed word finding task; combined results for those with hypothermia and those with normothermia; (g)Only included patients with good premorbid activities of daily living; (h)Geriatric ward sample of older patients.

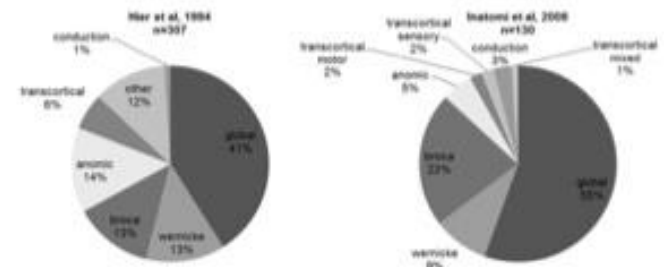
The neural network subserving language function is increasingly recognized to be a large and complex system involving regions throughout the cerebral hemisphere. The language network comprises areas of the perisylvian cortex, including the classical language areas of Broca and Wernicke: Broca's area or Brodmann's area 44 in the posterior inferior frontal gyrus innervates adjacent motor neurons subserving the mouth and larynx, and controls the output of spoken language; Wernicke's area or Brodmann's area 22, comprising the posterior two-thirds of the superior temporal gyrus, receives information from the auditory cortex and accesses a network of cortical associations to assign word meanings; the angular gyrus in the inferior parietal lobule is adjacent to visual receptive areas and subserves the perception of written language, as well as other language processing functions. Additional regions have a significant contribution to language function: the insula, several frontal and temporal lobe regions and vast regions of the temporal, occipital, and parietal cortex, as well as subcortical nuclei. [37-42]

The incidence of aphasia may differ according to stroke etiology (see table 1). Some studies have documented aphasia in unselected stroke samples, involving all three etiologies: ischemic, ICH and SAH, with frequencies ranging between 21% [43] and 35% [44]. Samples that considered only first-ever stroke for all three etiologies have reported frequencies ranging from 17 [45] to 30% [46]. When SAH was excluded, studies have reported frequencies ranging from 23 [43] to 41% [12]. To our knowledge, only two studies have included both types of hemorrhagic stroke, reporting a combined frequency of 9% [43] and 20% [47]. After isolated ICH, the reported frequency of aphasia ranges from 15 [48] to 36% [12]. Two studies have reported aphasia frequencies of 3 [12] and 12% [31] after SAH. Documents of the frequency of aphasia after ischemic stroke range from 15 [24] to 40% [12], with frequencies ranging from 23 [20] to 39% [37] after first ischemic stroke. The presence of language impairment is preferentially associated with previous stroke [12], increasing age [12, 21, 22, 41, 42] female gender [42], stroke severity [24], atrial fibrillation [21, 22, 49, 50], cardio-embolic etiology [51]. Published reports differ concerning the frequency of phenotypes of aphasia after stroke and there is a paucity of literature describing the clinico-radiological correlation. Croquelois and Bogousslavsky recently studied 1541 patients with aphasia in the early stages of stroke (ie within the 24 hours following onset), classifying them according to aphasic patterns, where 38% presented with expressive-receptive aphasia, 37% with expressive aphasia and 25% with receptive aphasia [52] (see figure 2). In same setting, Kumral and his colleagues described a series of 454 patients with acute aphasia in the first four weeks after stroke, identifying receptive-expressive aphasia in 60%, expressive aphasia in 22%, and receptive aphasia in 14% [30]. Two studies have described more specific phenotypes in series of consecutively admitted patients with aphasia [23, 25] (see figure 2), where one demonstrated the highest frequency for expressive-receptive aphasia [23] and the other for expressive aphasia [25]. In both studies, receptive aphasia types were least frequent [23, 25]. Two additional studies have reported subtypes of aphasia in acute stroke patients following ischemic stroke and ICH, excluding SAH [43, 53]. In one of these two studies, expressive-receptive aphasia predominated [43] at 40%, while receptive aphasia was most frequent in the other [53] at 65%.

Mixed Etiologies



Isolated Etiologies – Ischemic Stroke



Isolated Etiologies – Intracerebral Hemorrhage

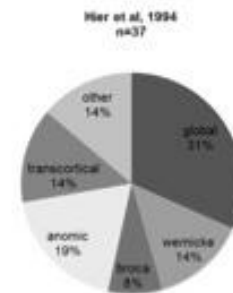


Figure 2. Classification of aphasia subtypes according to stroke etiologies by study. Total percentages may not equal one hundred, due to rounding to the nearest percent.

The small sample size in the latter study may account for this variation [53], when compared to the larger studies. Three studies have considered aphasia classifications after isolated etiologies. Two documented aphasia after ischemic etiology [24, 43], demonstrating that expressive-receptive aphasia predominated, with frequencies of 41% [43] and 56% [24], followed by expressive aphasia with frequencies of 27% [43] and 29% [24]. Receptive aphasia was least frequent at 14% in both studies.

Hier and his colleagues also documented aphasia subtypes after intracerebral hemorrhage, demonstrating the highest frequency for receptive-expressive aphasia at 31%, followed by expressive aphasia at 27% and then receptive aphasia at 14% [43].

Discrepancies in these results are probably due to differences between the sensitivity and specificity of tools versus bedside clinical evaluation and to the timing of evaluation, as aphasia can improve rapidly shortly after the onset of stroke. To illustrate, a study involving 130 acute ischemic stroke patients with aphasia demonstrated improvement of aphasia in 46% and resolution in 21% within the first 10 days following stroke onset [24]. In addition to reporting aphasia based on subtypes in these studies, some authors noted numerous unclassifiable aphasias (25%) [23, 43] or subcortical aphasias [23]. These unclassifiable aphasias may be comprised of patients with co-occurring subtypes or they may result from the method of determining subtypes, where certain patients do not fit the study's definition of each subtype. Also, diaschisis and "penumbra phenomenon", resulting in hypoperfusion to anatomical regions associated with aphasia, are possible explanations for rapid improvement, subcortical aphasia [23] or for evolution from nonfluent to fluent aphasia [25].

1.3. Prognosis

In spite of the potential for rapid improvement, language impairment usually still affects 50% of initially aphasic patients 18 months after stroke [25, 53], thereby contributing to altered quality of life beyond the aphasia itself [45]. Primary consequences may include symptoms of depression, difficulty to participating in rehabilitation, difficulty understanding therapists', social draw-back and decreased frequency of professional activities [54-56].

It is difficult to predict the outcome of aphasia, even if aphasia after hemorrhagic stroke has a better prognosis than after cerebral infarctions [57]. To the present day, only initial stroke severity (according to NIHSS) and the initial severity of aphasia have been shown to predict importance of aphasia recovery after acute ischemic stroke [24, 25]. In a recent study, Maas conclude that advanced age, the presence of hypodense regions, a history of previous stroke, and sedentary activity level significantly predicted a diminished likelihood of language improvement at discharge. At 6 months of follow-up, only the prestroke mRS significantly impacted likelihood of improvement [58].

2. TOOLS FOR LANGUAGE ASSESSMENT

2.1. Available Tools

Early detection of aphasia after stroke may improve rehabilitation by taking advantage of the synergy between intensive speech therapy and early neural reorganization [59-61]. Tools

capable of detecting aphasia and evaluating its severity during the acute phase of stroke might help to improve early rehabilitation and to predict outcome [62]. Standard aphasia rating scales such as the Western Aphasia Battery, the Boston Diagnostic Aphasia Evaluation (BDAE), and the Boston Naming Test are not appropriate for use during the acute phase of stroke [61, 63-65]. In particular, these gold standard test batteries take too long to complete and must be administered by speech and language therapists [63-65]. Global stroke rating scales such as the National Institutes of Health Stroke Scale and the Scandinavian Stroke Scale include language items and have been developed for use in acute settings [66-71], but they do not reliably detect aphasia [62]. Several attempts have been made to develop and validate brief aphasia screening scales suitable for patients with acute stroke [72-79], but all have inherent structural limitations, including [61]: (1) inclusion of written language subtests, the results of which are influenced by hemiplegia and illiteracy [59, 73-76, 79]; (2) use of complex visual material inappropriate for stroke patients with neuro-visual deficits [73, 74], (3) inclusion of subtests that are markedly influenced by attention/executive dysfunction [73, 74]; (4) excessively lengthy administration [76]; (5) difficulties with administration or scoring [59, 72, 76, 79]; and (6) IQ dependency [75]. Some of these scales also have poor sensitivity for the detection of aphasia and provide a little information regarding measures of validity and reliability [59, 76].

2.2. A Novel Tool: LAST, the Language Screening Test

Early and precise diagnosis of aphasia is necessary and justified for informed decision making, such as the use of thrombolysis and the implementation of early and individually-tailored rehabilitation. Evaluation may help to localize lesion site, prior to magnetic resonance imaging [80]. A quantitative tool is needed to document the risk or presence of aphasia and to quantify repeat evaluations. Such a tool would also permit description of aphasic patterns according to lesion localization, such as transcortical aphasia following acute border-zone infarcts [81, 82]. A recent study investigated the correlation between language tasks and brain lesions, concluding that word repetition, sentence repetition and naming best-predicted lesions in the left hemisphere lesion [83]. Counting and comprehension were also impaired in patients with brain injuries [83].

We recently developed and validated a brief language screening scale in French, the Language Screening Test (LAST) [84], to screen for risk of aphasia and to facilitate timely assessment of patients after acute stroke. We validated and documented reliability for two versions of the tool in an unselected sample of chronic and acute stroke patients, excluding SAH. The scale consists of 5 subtests: picture naming (items selected based on lexical familiarity and image evoking value), repetition (of a word and a sentence), automatic sequence (counting from 1 to 10), picture recognition (including semantic, visual and phonemic foils) and auditory commands (including 1 simple and 2 complex instructions). These subtests were chosen for their high correlation with left hemisphere lesions. Two parallel and equivalent versions of LAST (a and b) were developed to avoid a re-test effect. Each item is scored as 1 if correct and 0 if incorrect or inappropriate; The total scores range from 0 to 15, with a cut-off at 14 for the diagnosis of aphasia, as compared to the BDAE. The test is administered on a letter-sized sheet of paper (one side for the expressive index and one side for the receptive index). Administration requires fewer than three minutes. The simplicity

of LAST makes it suitable for bedside administration by any health professional. The LAST is useful as a rapid and reliable screen for aphasia, with proven specificity. Given the existence of two parallel versions, a second quantification of aphasia is possible during a follow-up period.

3. RECOVERY

Speech and language therapy is assumed to be beneficial; A recent Cochrane review (2010) reported some indications of the effectiveness of SLT for people with aphasia following stroke [85]. Moreover, the authors documented results favouring intensive SLT over conventional SLT. However, there was insufficient evidence in this review to establish the effectiveness of one SLT approach over another [85].

Neural processes underlying recovery remain unknown [86]. Different factors may play a role, such as age, stroke size and location, premorbid level of education, and environmental support [63]. It has been documented that hemorrhagic strokes evolve better than ischemic strokes [57]. However, the only predictive factor of speech and language recovery following cerebral infarctions is the initial severity of stroke [24, 25]. One study postulated that, as with motor recovery, improvement from aphasia is directly correlated with the initial deficiency, with an estimated recovery of 70% at 90 days post stroke onset [87]. Aphasia usually results from lesions affecting the left hemisphere in right-handed patients as well as in the majority of left-handed patients [35, 36]. Cerebral plasticity and changes in neural organization interfere with the restoration of language function [88, 89]. This is due to post-stroke compensation in the undamaged language areas, perilesional tissue and homologue right language areas [90]. In the setting of a very focal lesion, perilesional areas participate in recovery at the acute phase and during rehabilitation. Two different mechanisms are supposed: transient hypoperfusion of these territories (“penumbra”) and early neuronal reorganization with up regulation of these areas [91]. In larger lesions, language recovery could implicate the right hemisphere, as demonstrated in functional imaging and neurophysiologic studies [92-94]. Homologous right-sided regions that could be implicated in the process of language recovery are the superior temporal lobe (auditory control), the inferior frontal gyrus, pre-motor areas (planning of motor actions and nonlinguistic perception of language) and the motor cortex (execution of verbal motor actions) [86, 95, 96]. A recent study reports the extraordinary case of a man who benefited from a pre and post stroke functional MRI (fMRI): the patient presented with a Broca’s aphasia after a large ischemic infarction within the territory of the left middle cerebral artery, with almost complete recovery [96]. The fMRI shows a perilesional reorganization but no significant recruitment of the right hemisphere one year after stroke [96]. A second functional MRI study reported the dynamics of language reorganization in 14 stroke patients describing activation of perilesional areas initially (as explored at day 2) [90]. Subsequent areas of reorganization included the right homologue of Broca’s area in the sub acute period (day 12 after stroke) and later the reactivation of the left language areas in the chronic phase (explored one year after onset of symptoms) [90]. These findings should be taken in account when planning rehabilitation.

4. REHABILITATION

Speech and language therapy (SLT) aims at improving communication using verbal or nonverbal treatment modalities. Recent guidelines recommend speech therapy for patients with aphasia following stroke in spite of contradictory results from a few previous studies [85, 97, 98]. This heterogeneity could result from unsuitable tools, large heterogeneous cohorts, initiation of intensive therapy at differing time periods following stroke [99] or different rehabilitation techniques [98, 100].

Functional imaging and behavioral studies have shown that SLT can modulate neural plasticity [101]. Because inappropriate rehabilitation may interfere with reorganization of language, it should be implemented according to the aphasia classification. Therefore, semantic phonological, and/or morphosyntactic therapies should be proposed according to the initial language impairment [102, 103]. In our center, different methods of SLT are performed according to each patient's needs and type of aphasia. We suggest that therapy should be implemented on a daily basis as early after stroke onset as possible. In particular, the specific contributions of the right hemisphere, such as prosodic and rhythmic properties of language, should be targeted in therapy to favor activation of contralateral language areas [104]. Early SLT in nonverbal patients or patients with severely reduced verbal output is important in order to avoid stereotypes. In accordance with one hypothesis on the dynamics of language recovery, and to capitalize on the potential role of the right hemisphere, we practice early SLT using melodic intonation therapy (MIT) [92]. We have proposed an auditory stimulation program, using a daily music listening program in our unit (one hour of music with French lyrics for our francophone population), derived from recently reported benefits [104]. Patients are encouraged to listen to music with lyrics and to actively sing along. A recent study with clinician blinding has sought to determine the immediate effects of introducing MIT early after stroke onset in patients with Broca's aphasia [105]. The treatment group showed a significant improvement compared to the control group, supporting the benefit of using this therapy method after acute stroke [105].

Although some have argued that early speech therapy is not feasible or necessary, we contend that it is indeed feasible and paramount to optimizing recovery. Second to promoting language recovery, initiation of therapy may reassure patients and help educate caregivers. As part of the therapeutic initiative, caregivers are provided advice for supportive communication [106] and to aid in eliciting compensatory strategies from the patient. Early therapy also facilitates better communication in patient care regarding medical explanations, instructions, and interactions with other therapists and the medical team.

Contribution from the entire medical and paramedical team is essential in the treatment of aphasia. In our stroke unit, therapeutic information is discussed with nursing staff, because their frequent patient interactions are crucial for progression toward rehabilitation goals. Their numerous daily interventions with patients may play a role in increasing the intensity and functionality of speech and language objectives. Providing adequate information about aphasia to front-line health professionals and families is essential to avoid ambiguous interactions. This will promote clear explanations conducive to the reception capabilities of patients. Similar educational information and explanations are necessary for both families and caregivers to avoid misconceptions. For example, some relatives may think that a patient has incurred hearing loss, amnesia, cognitive decline or dementia, psychiatric disorders or that the

patient lacks physical sensation or emotion. Unfortunately, aphasia is not well understood, and educating family members and caregivers is essential to facilitate faster and more efficient recovery on the part of patients. Families and caregivers need to be well informed about the diagnosis and potential prognosis of the aphasia. As with front-line health care workers, other health professionals, such as physiotherapists or occupational therapists are inherently implicated in language rehabilitation in the acute phase. Their actions should be verbalized in an accessible formulation, with clear articulation, and with sufficient confirmation that the patient understands the instructions. In patients who are nonverbal or who have extremely limited verbal output, compensatory strategies such as the use of pictures, gestural communication, and letter require explanation to families and caregivers to prevent communication breakdown. Associated impairments, such as anosognosia after posteriorly localized aphasia and depression after anteriorly localized aphasia require additional considerations and caregiver education from the stroke team.

5. PERSPECTIVES

Effectiveness of SLT has been shown in different studies, and tools are now available to assess aphasia in acute stroke. Randomized controlled trials are still needed to indicate the best approach to delivering speech and language therapy. This will inform indications for the optimal approach, frequency, and duration of allocation and format of SLT for specific patient groups. Fortunately, recent randomized controlled studies have been conducted in the acute stage with a particular consideration of methods of speech therapy [103, 107]. Controversy from potentially contradictory results arose from methodological differences such as group size, randomization methods, and type, timing (early vs. delayed) and frequency of therapy (intensive vs. conventional) [85, 98, 108]. Intensive SLT, of any type, has been shown to be beneficial according to some authors [103]. Others consider that “intensive” and “early” SLT should be undertaken to promote early neuronal re-organization [59-61, 103].

Considering different therapy types by SLTs, a recent RCT investigated the effect of “Language enrichment therapy” [107], starting at day 2 post stroke and continuing to day 21. The control group received no SLT for at least the first 21 days post stroke. At day 21, 58% of the treatment group achieved a higher score on the aphasia test battery, while 35% achieved higher scores in the control group. However, the treatment group did not maintain gains in verbal communication six months following stroke. A more recent pilot RCT evaluated daily SLT according to patient classifications of aphasia, involving linguistically driven therapeutic tasks [103]. They compared patient tailored therapy with usual care and found that patients in the treatment group had significantly higher scores on the aphasia quotient and on a functional communication measure than the usual care group. Additional RCTs are still needed to better determine the optimal type, timing and intensity of speech language therapy in the setting of acute stroke.

The validation and availability of the LAST and the recent demonstration of the feasibility of conducting RCTs in the very early stages of stroke provide the impetus for designing future randomized studies that take type, timing and intensity of SLT into account after acute stroke. In addition, use of a validated language scale, such as the LAST, in

randomized trials or consecutive cohorts, could further promote research correlating acute clinical signs of aphasia with MRI, by which the efficacy of therapy for aphasia subtypes could be documented.

CONCLUSION

The early detection of aphasia after stroke is essential for reliable diagnosis in order to optimize rehabilitation. Available recent tools now allow for rapid and precise assessment of aphasia. Standard care protocols and teamwork promote best practice in the use of these tools, rendering them more efficient and effective. The implementation of such protocols involves the cooperation and coordination of both medical and paramedical personnel and the daily presence of speech therapists in stroke units. In particular, we recommend this daily presence for patients with aphasia, so that they may derive maximum benefit and the advantages of units that provide this type of standard care. Consequently, we expect that the long-term functional prognosis of these patients with aphasia will improve. Moreover, future randomized trials are essential to develop specific interventions for and to optimize SLT support.

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Chapter 94

A NEW CLASSIFICATION OF APHASIAS

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ABSTRACT

In this chapter it is emphasized that there are only two fundamental forms of aphasia, which are linked to impairments in the lexical/semantic and grammatical systems of language (Wernicke-type aphasia and Broca-type aphasia, respectively). Other aphasic syndromes do not really impair language knowledge per se, but rather either some peripheral mechanisms required to produce language (conduction aphasia and aphasia of the supplementary motor area), or the executive control of the language (extra-Sylvian or transcortical motor aphasia). A new classification of aphasic syndromes is suggested. In this proposed classification a distinction is established between primary (or “central”) aphasias (Wernicke’s aphasia—three subtypes—and Broca’s aphasia); secondary (or “peripheral”) aphasias (conduction aphasia and supplementary motor area aphasia); and dysexecutive aphasia.

INTRODUCTION

Aphasia represents the most studied cognitive syndrome associated with brain pathology. As a matter of fact, the analysis of aphasia represents the initial question and departing point in modern cognitive neuroscience. Understanding aphasia is consequently most crucial in our interpretations about brain organization of cognition.

Diverse aphasia classifications have been proposed since Broca’s first description of a language disturbance associated with brain pathology (Broca, 1863). There are, however, two most influential aphasia classifications, that have significantly guided the area during the last decades: the Boston Group classification (Geschwind, Benson, Alexander, Goodglass,

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Kaplan, and others); and Luria’s aphasia interpretation. The first one has been particularly influential in the US and western European countries; the second one has been mostly used in eastern European countries and Latin America.

Boston Group classification represents a further development of Wernicke’s ideas about brain organization of language, and includes two basic distinctions: (1) aphasias can be fluent or non-fluent; and (2) aphasias can be cortical, subcortical, or transcortical (e.g., Albert, Goodglass, Helm, Rubers, & Alexander, 1981; Alexander & Benson, 1991; Benson, 1979; Benson & Geschwind, 1971, 1985; Geschwind, 1965; Goodglass, 1993; Goodglass & Kaplan, 1972). Conduction aphasia (initially proposed by Wernicke in 1874 and described by Lichtheim in 1885) was introduced to account for the language repetition impairments frequently found in left parietal (or insular) damage.

Luria (1966, 1970, 1974, 1976, 1980) proposed, initially six, but later seven aphasia subtypes: motor efferent or kinetic, motor afferent or kinesthetic, acoustic-agnosic, acoustic-amnesic, amnesic, semantic, and dynamic). Luria assumed that in each aphasia subtype there is a particular language processing defect. In Luria’s approach, aphasia subtypes and names refer to the specific level of language that is impaired.

Benson and Ardila (1996) attempted to integrate both points of view and proposed a classification based on two different anatomical criteria: (1) aphasia can be pre-Rolandic (anterior, non-fluent) or post-Rolandic (posterior, fluent); and (2) aphasia can be associated with pathology in the peri- Sylvian language area (peri-Sylvian aphasias); or aphasia is due to damage beyond this area (extra-Sylvian). Subtypes were introduced for some aphasia syndromes. Aphasias were also regarded as anatomical syndromes (Table 1). This classification is currently used by different authors (e.g., Basso, 2003).

Table 1. Two major parameters are used in aphasia classification:
(a) Aphasia can be pre-Rolandic or post-Rolandic; (b) Aphasia can be peri-Sylvian or extra-Sylvian. Clinical syndromes are related to anatomical syndromes

	Pre-Rolandic	Post-Rolandic
Peri-Sylvian	Broca's Type I (triangular syndrome)	Conduction (parietal-insular syndrome)
	Broca's Type II (triangular-opercular-syndrome)	Wernicke's Type I (posterior insular-temporal isthmus syndrome)
		Wernicke's Type II (superior and middle temporal gyrus syndrome)
Extra-Sylvian	Extra-Sylvian Motor Type I (left prefrontal dorsolateral syndrome)	Extra-Sylvian Sensory Type I (temporal-occipital syndrome)
	Extra-Sylvian Motor Type II (supplementary motor area syndrome)	Extra-Sylvian Sensory Type II (parieto-occipital angular syndrome)

According to Benson & Ardila, 1996.

During the last decades significant advances in the understanding of brain organization of language has been obtained. Contemporary neuroimaging techniques, such as fMRI (e.g., Meinzer, Harnish, Conway & Crosson, 2011; Zahn et al., 2000), PET (Cao, George, Ewing, Vikingstad & Johnson, 1998) and tractography (Song et al., 2011; Yamada et al., 2007), have significantly extended our understanding of the organization of language in the brain under normal and abnormal conditions (Lee, Kannan & Hillis, 2006; Small & Burton, 2002); a significantly better understanding of the brain circuitries supporting language has been developed (e.g., Ullman, 2004); and a re-analysis of the classical language areas (Broca's and Wernicke's) has been developed (e.g., Grodzinsky & Amunts, 2006); and new scientific discoveries, such as the "mirror neurons", have changed our understanding of the functioning of the human brain, including language organization (e.g., Rizzolatti & Arbib, 1998).

In this chapter a further attempt is made to integrate these new advances; a new classification of aphasia syndromes will be proposed. This new aphasia classification was recently presented (Ardila, 2010) and has been discussed by several authors (e.g., Buckingham, 2010; Kertesz, 2010; Marshall, 2010).

THERE ARE ONLY TWO MAJOR APHASIC SYNDROMES

There is a fundamental point in the analysis of aphasia: aphasia is not one, but two different clinical syndromes, initially described by Broca in 1861 and Wernicke in 1874. These two syndromes have been named in different ways, but roughly corresponding to Wernicke-type aphasia and Broca-type aphasia (e.g., Ardila, 2010; Albert et al., 1981; Alexander & Benson, 1991; Bastian, 1898; Benson & Ardila, 1996; Freud, 1891/1973; Goldstein, 1948; Head, 1926; Hecaen, 1972; Kertesz, 1979; Lichtheim, 1885; Luria, 1976; Pick, 1931; Schuell, Jenkins, & Jimenez-Pabon, 1964; Taylor-Sarno, 1998; Wilson, 1926; see Tesak & Code, 2008, for review).

Aphasia represents a language disturbance and consequently, not only a neurologic/anatomic but also a linguistic understanding is required. Jakobson (1964; Jakobson & Halle, 1956) proposed that these two major aphasic syndromes are related to the two basic linguistic operations: selecting (language as paradigm) and sequencing (language as syntagm). Jakobson (1964) proposed that aphasia tends to involve one of two types of linguistic deficiency. A patient may lose the ability to use language in two rather different ways: the language impairment can be situated on the paradigmatic axis (similarity disorder) or the syntagmatic axis (contiguity disorder). The first one is related with the Wernicke-type aphasia, and the second one with the Broca-type aphasia.

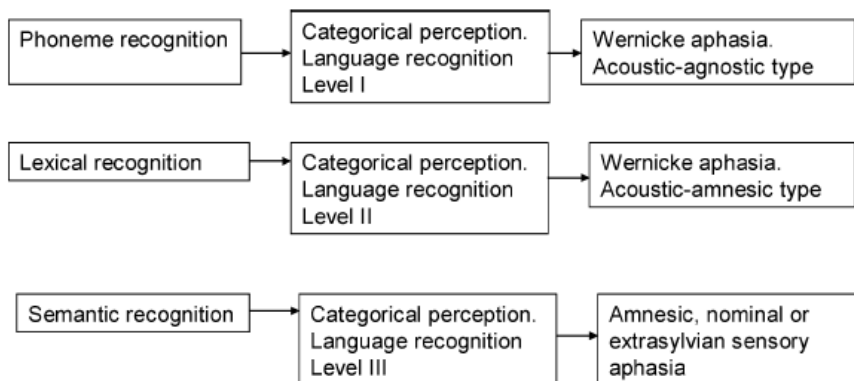
Wernicke-Type Aphasia

In Wernicke-type aphasia the lexical repertoire tends to decrease and language-understanding difficulties are evident. Wernicke's aphasia patients may not fully discriminate the acoustic information contained in speech (Robson, Keidel, Ralph & Sage, 2012). Lexical (words) and semantic (meanings) associations become deficient. In Wernicke-type aphasia

the language defect is situated at the level of meaningful words (nouns). Phoneme and word selection are deficient, but language syntax (contiguity: sequencing elements) is well preserved and even overused (paragrammatism in Wernicke aphasia). Wernicke-type aphasia represents the clinical syndrome characterized by impairments in the selection process (paradigmatic axis defect).

Patients with Wernicke aphasia have problems in recalling the words (memory of the words) and also in associating the words with specific meanings: the semantics of the words can be abnormal. This means that at least three different deficits underlie Wernicke-type aphasia: (1) phoneme discrimination impairments (auditory verbal agnosia); (2) verbal memory impairments; and finally (3) lexical/semantic association deficits. Robson, Sage and Ralph (2012) emphasized that deficits responsible for the comprehension defects in Wernicke aphasia are diverse, including acoustic-phonological defects, and semantic deficits.

Figure 1 presents in a summarized form the model proposed by Ardila (1993) to account for language recognition. It is assumed that there are three different levels of language understanding (phoneme recognition, lexical recognition, and semantic recognition). These three language understanding levels can be impaired in cases of Wernicke-type of aphasia. In consequence, there are three different subtypes of Wernicke aphasia: Acoustic-agnosic type (associated with phoneme recognition defects), acoustic amnesic type (associated with lexical recognition defects), and amnesic, nominal or traditionally called transcortical (extrasyllvian) sensory aphasia (associated with semantic recognition defects).



Adapted from Ardila, 1993.

Figure 1. Three levels of language recognition potentially impaired in Wernicke-type aphasia can be distinguished: phonemic (categorical perception level I), lexical (categorical perception level II), and semantic (categorical perception level III). Three different sub-syndromes can be found: phonemic discrimination defects (acoustic-agnosic or Wernicke's aphasia type I), verbal-acoustic memory defects (acoustic-amnesic or Wernicke's aphasia type II), and semantic association defects (amnesic, nominal or extra-Sylvian sensory aphasia).

Broca-Type Aphasia

In Broca-type of aphasia, language defects are quite different; while the lexical/semantic dimension of the language is preserved, grammar is seriously impaired. Language is scarce,

nonfluent, and poorly articulated, but language understanding is relatively well preserved. That means, the selection process (paradigmatic axis) is normal. According to Jakobson (1964) in Broca-type aphasia the syntagmatic axis of language is impaired. There is a defect in language sequencing (morphosyntax). Indeed, in Broca's aphasia two different distinguishing characteristics can be observed, one at the motor level and the other at the purely language level: (1) there is on one hand a motor component (lack of fluency, disintegration of the speech kinetic melodies, verbal-articulatory impairments, etc., that is usually referred as apraxia of speech); and (2) on the other hand, there is a reduction in the grammar, usually referred as agrammatism (e.g., Benson & Ardila, 1996; Berndt & Caramazza, 1980; Goodglass, 1993; Kertesz, 1985; Luria, 1976). Interestingly, a large part of the fronto-parieto-temporal cortex has been observed to be involved with syntactic-morphological functions (Bhatnagar, Mandybur, Buckingham, & Andy, 2000). Apraxia of speech has been observed specifically associated with damage in the left precentral gyrus of the insula (Dronkers, 1996; but see Hillis et al., 2004). It should be noted that not all of apraxia of speech is indeed a contiguity disorder; there are many phonetic-level errors in apraxia of speech that have more to do with segmental distortions. If both impairments (apraxia of speech and agrammatism) are simultaneously observed (i.e., they are very highly correlated), it can be assumed they are just two different manifestations of a single underlying defect. It is not easy to understand which one could be the single factor responsible for these two clinical manifestations, but it may be kind of "inability to sequence expressive elements". Broca's area, most likely, is not specialized in producing language, but in certain neural activity that can support not only skilled movements required for speech, but also morphosyntax. It has been observed that indeed language networks supporting grammar and fluency are overlapped in the brain (Borovsky, Saygin, Bates, & Dronkers, 2007).

HOW TO INTERPRET OTHER APHASIC DISTURBANCES?

Frequently it has been assumed that three major (perisylvian) aphasic syndromes can be distinguished: frontal Broca aphasia, temporal Wernicke aphasia, and parietal conduction aphasia (e.g., Benson, 1979; Goodglass, 1993). These are the three aphasia disorders associated with damage in the so-called "brain language area"; a concept introduced by Dejerine (1914), roughly corresponding to the perisylvian area of the left hemisphere, and including partially the frontal, temporal and parietal lobes of the left hemisphere.

In addition to Broca, Wernicke and conduction aphasia, aphasia classifications generally include a diversity of additional language disturbances, such as transcortical (extra-Sylvian) aphasia, and anomic aphasia (e.g., Alexander & Benson, 1991; Benson & Geschwind, 1971; Hecaen & Albert, 1978; Kertesz, 1979; Lecours, Lhermitte, & Bryans, 1983; Luria, 1966). However, some aphasic syndromes can eventually be considered as variants of the Broca and Wernicke aphasias. For instance, as mentioned above, amnesic or anomic or nominal aphasia (usually due to damage in the vicinity of BA 37) (Head, 1926; Hecaen & Albert, 1978; Luria, 1976), as well as transcortical sensory aphasia can be interpreted as subtypes of Wernicke aphasia in which the semantic associations of the words are significantly impaired (see Figure 1).

No question, the major difficulty in interpreting these additional syndromes refers to conduction aphasia, considering that conduction aphasia is frequently regarded as one out the three major aphasia syndromes (in addition to Broca aphasia and Wernicke aphasia).

Conduction Aphasia

A crucial question is, how conduction aphasia—a well recognized and extensively studied aphasic syndrome (e.g., Benson & Ardila, 1994; Damasio & Damasio, 1980; Goldstein, 1948; Kohn, 1992) — can be interpreted?

The most frequent, and classic, explanation of conduction aphasia is as a disconnection syndrome (e.g., Damasio & Damasio 1980; Geschwind 1965; Wernicke 1874), usually due to a lesion affecting the arcuate fasciculus (Yamada et al., 2007) and sporadically an indirect pathway passing through the inferior parietal cortex (Catani, Jones, & Ffytche, 2005). This is the usually explanation, sometimes referred as the Wernicke-Geschwind disconnection model of conduction aphasia. Alternatively, conduction aphasia has also been interpreted as a segmentary ideomotor apraxia (e.g., Ardila & Rosselli., 1990; Brown, 1972, 1975; Luria 1976, 1980). According to this second interpretation, conduction aphasia could be regarded as a verbal apraxia, an ideomotor apraxia impairing the movements required for speaking, or simply as a kinesthetic apraxia of speech. Luria (1976) suggested that paraphasias in conduction aphasia (Luria's kinesthetic motor or afferent motor aphasia) are indeed articulatory-based deviations (articulatory literal paraphasias), not really phonological disturbances. Paraphasias in conduction aphasia are due mainly to phoneme substitutions and phoneme deletions; they result basically in switches in phoneme manner and place of articulation (Ardila, 1992). Similarities between errors in ideomotor apraxia and conduction aphasia language deficits have been suggested.

According to Benson, Sheretaman, Bouchard, Segarra, Price, and Geschwind (1973) conduction aphasia has three fundamental and five secondary characteristics; so-called secondary characteristics are frequently but not necessarily found in conduction aphasia. The three basic characteristics are: (1) fluent conversational language; (2) comprehension almost normal; and (3) significant impairments in repetition. Secondary characteristics include: (1) impairments in naming; (2) reading impairments; (3) variable writing difficulties (apraxic agraphia); (4) ideomotor apraxia; and (5) additional neurological impairments. Bartha and Benke (2003) report that conduction aphasia patients present as relatively homogenic in their aphasic manifestations: severe impairment of repetition and fluent expressive language functions with frequent phonemic paraphasias, repetitive self-corrections, word-finding difficulties, and paraphrasing. Repetitive self-corrections frequently result in so-called *conduit d'approche*. Language comprehension (auditory and reading) is only mildly impaired.

Benson et al.'s. (1973) description of conduction aphasia clearly recognizes that spontaneous language production and language understanding are significantly preserved. In consequence, some mechanisms required for correct language repetition are impaired, but the knowledge of language itself (phonology, lexicon, semantics, and grammar) is not impaired. The critical question is: Should conduction aphasia be interpreted as a primary aphasic syndrome? Indeed, language repetition impairments can be observed in different aphasia syndromes and language repetition has also been interpreted as a right hemisphere ability (Berthier et al., 1991).

The distinction between “aphasias with repetition impairments” vs “aphasias without repetition impairments” is indeed a general and crude distinction. It has been proposed that different aphasia groups (including the so-called transcortical aphasias) may present language repetition errors; but depending on the specific repetition task, errors may be evident or may be unnoticed in a particular aphasic group (Ardila & Rosselli, 1992). Different mechanisms underlying repetition deficits have been proposed: limitation of auditory-verbal short-term memory, difficulties at the level of phonological production, impairments in phoneme recognition, and semantic and syntactic comprehension defects. Simply speaking, different deficits can be responsible for the repetition defects found in aphasia. Furthermore, difficulties in language repetition depend on the specific repetition task (short words, long sentences, meaningful, meaningless, etc).

Conduction aphasia is, consequently, not a primary form of aphasia, but rather a secondary (or “peripheral”) defect in language indirectly affecting a specific language ability (i.e., the ability to repeat). Language itself is not impaired, but rather it represents an impaired ability to reproduce aloud the auditory information that is heard. Of course, this is an important skill used not only to develop language but also to use it correctly. Interpreting conduction aphasia as a secondary (or “peripheral”) defect in language (rather than a primary or central form of aphasia) does not in any way decrease the importance of repetition in language.

In brief, it can be argued that conduction aphasia can be interpreted as a “secondary” (or “peripheral”) language disturbance, rather than a primary (or “central”) form of aphasia. Language knowledge is well preserved in conduction aphasia, but there is a limitation in a particular language function, i.e., repetition. Obviously, if some animals can repeat, that means that language repetition cannot be considered as a primary linguistic ability.

Interestingly, Jakobson (1964) suggested a similar distinction when proposing that in aphasia language could be either “disintegrated” or “limited” (disintegration vs limitation in aphasia). Obviously language is disintegrated only in Wernicke and Broca aphasia. In other forms of aphasia, including conduction aphasia, language is limited, not disintegrated.

Transcortical (Extra-Sylvian) Motor Aphasia

Patients with left convexital prefrontal damage usually present a lack of verbal initiative and a significant limitation in the active use of the language, referred as transcortical (extra-Sylvian) or dynamic aphasia. Extra-Sylvian (transcortical) motor aphasia could be interpreted as an executive function defect specifically affecting language use. The ability to actively and appropriately generate language appears impaired while the phonology, lexicon, semantics, and grammar are preserved.

Should the ability to correctly generate language be regarded as a linguistic ability (i.e., cognitive ability)? Or rather, should it be considered as an executive function ability (i.e., metacognitive ability)? It does not seem difficult to argue that the ability to correctly organize language sequences can be regarded as an executive function and as a metacognitive ability rather than a purely linguistic ability. Some rationales to support this interpretation are: (1) It could be argued that in extra-Sylvian (transcortical) motor aphasia there is a defect in verbal initiative rather than in language knowledge (Kleist, 1934). (2) Different authors (for example, Luria, 1976, 1980) have emphasized that this type of aphasia shares the general

characteristics of prefrontal (i.e., dysexecutive) syndrome but specifically with regard to verbal processes. This means, it is the prefrontal (dysexecutive) syndrome affecting the verbal processes (Gold et al., 1997). (3) Further, the impairment in extra-Sylvian (transcortical) motor aphasia does not affect language understanding, and fundamental linguistic processes are preserved (Berthier, 1999). And finally, (4) it could be argued that the prefrontal cortex does not participate in basic cognition, but rather in metacognition (e.g., Ardila & Surloff, 2011).

In consequence, extra-Sylvian (transcortical) motor aphasia does not necessarily have to be interpreted as a primary aphasic syndrome, but rather as a language disturbance due to a more general intellectual impairment (dysexecutive syndrome). Extra-Sylvian (transcortical) motor aphasia could indeed be referred to as “dysexecutive aphasia”. Some authors have previously interpreted extra-Sylvian motor aphasia in a similar way (e.g., Luria 1976, 1980). Alexander (2006) suggested that transcortical motor aphasia could be more accurately defined as an executive function disorder rather than aphasia. He proposed that the progression of clinical disorders from aphasia to discourse impairments can be interpreted as a sequence of procedural impairments from basic morpho-syntax to elaborated grammar to narrative language, correlated with a progression of the focus of the damage from posterior frontal to polar and/or lateral frontal to medial frontal.

Transcortical (Extra-Sylvian) Sensory Aphasia

Transcortical (extra-Sylvian) sensory aphasia (TSA) has been a polemic syndrome. Seemingly, the polemic is related to the way TSA is defined.

TSA has been defined in two partially different ways; (1) according to its “basic” definition, TSA is a fluent language disorder characterized by impaired auditory comprehension, with preserved repetition (Albert et al., 1981; Berthier, 1999; Goldstein, 1948; Lichtheim, 1885). Consequently, there are only three distinguishing characteristics in TSA (normal fluency, impaired auditory comprehension, and preserved repetition). In such a case, TSA presents similar deficits as in Wernicke’s aphasia, but repetition ability is spared and phoneme discrimination impairments are not found. (2) According to its “extended” definition, TSA also includes a semantic jargon (Goodglass, 1993; Kertesz, 1982; Lecours, Osborn, Travies, Rouillon, & Lavalle-Huyng, 1981). Kertesz (1985, p. 317) makes a comprehensive definition of TSA: “TSA is characterized by fluent and often irrelevant speech output, very poor comprehension and well-preserved repetition. Spontaneous speech often consists of semantic jargon that has no relationship to what is being asked of the patient”. This definition clearly recognizes that there are three basic characteristics, and sometimes jargon is found. But jargon is not a required symptom for the diagnosis of TSA. By the same token, other language impairments can also be found, such as poor naming, and preserved oral reading with impaired reading comprehension, but their presence is not essential to establish the diagnosis of TSA (Berthier, 1999).

According to Berthier (1999) the most common pattern of verbal expression is represented by the so-called “semantic” or “verbal” jargon (e.g., Lecours & Rouillon, 1976). There is an abundant language production, with reduction of meaningful words conferring the impression of emptiness. The content of the sentence is irrelevant. Furthermore, TSA patients appear unaware of their logorrhea (Lebrun, 1987). A second

pattern of spontaneous speech described by Berthier (1999) is referred to as “anomic” and is associated with an impaired access to content words. This second pattern corresponds to the TSA “basic” definition mentioned above.

Because repetition is spared, phonological processing is assumed to be preserved, at least partially, while lexical-semantic information included in the word meaning is impaired (Boatman et al., 2000). Usually, it is accepted that TSA is associated with relatively extensive posterior lesions including the temporo-parieto-occipital junction of the left hemisphere but sparing the areas around the primary auditory cortex (Berthier, 1999). Damasio (1991) observed that TSA is associated with lesions involving the temporal-occipital area (BA 37), the angular gyrus (BA 39), or the white matter underlying these regions, but sparing the primary auditory cortex (BA 41 and 42), and BA 22. Damasio suggested that the core area for TSA is the temporal-occipital area (BA 37) with variable extension to the occipital lobe and the angular gyrus. Kertesz (1982) analyzed 15 patients with TSA and proposed two different subgroups: one is more medial, inferior, and posterior and is clearly in the posterior cerebral artery territory; and the other is relatively more lateral, superior, and anterior and seems to be in a watershed area between middle cerebral and posterior cerebral arteries.

Benson and Ardila (1996), considering this variability in TSA, also distinguished two subtypes: the first one similar to Luria’s amnesic aphasia (BA 37), and the second one corresponding Luria’s semantic aphasia (BA 39). This distinction is coincidental with the neuroanatomical correlates of TSA found by Damasio (1991).

Recent reports support the assumption that TSA is usually found associated with extensive lesions of the left hemisphere (e.g., Warabi, Bandoh, Kurisaki, Nishio, & Hayashi, 2006), generally involving large portions of the temporal-parietal-occipital areas. According to Alexander, Hiltbrunner, and Fischer (1989) the critical lesion for transcortical sensory aphasia in these patients involved pathways in the posterior periventricular white matter adjacent to the posterior temporal isthmus, pathways that are most likely converging on the inferolateral temporo-occipital cortex.

TSA represents a disorder in the semantic recognition of language that may or may not be associated during the acute stage with other language impairments, specially logorrhea and jargon, depending on the extension of the lesion. But logorrhea and jargon are not required in the definition of TSA.

Supplementary Motor Area (SMA) Aphasia

This is a type of language disturbance recognized relative late in the aphasia history. Supplementary motor area (SMA) aphasia indeed is not associated with damage in the so-called “language area” of the brain. Penfield and Welch (1951) first observed arrest of speech associated with stimulation of this cortical region. Clinical characteristics of this type of aphasia were described by Rubens (1975, 1976).

Language disturbances in cases of damage of the left SMA have been characterized by, (1) an initial mutism lasting about 2–10 days; (2) later, a virtually total inability to initiate speech, (3) a nearly normal speech repetition, (4) a normal language understanding, and (5) absence of echolalia. A right leg paresis and right leg sensory loss are observed; a mild right shoulder paresis and Babinski sign are also found. Language recovery is outstanding and it is usually observed during the following few weeks or months (Ardila & Benson, 1996; Rubens,

1975, 1976). The occlusion of the left anterior cerebral artery is the most frequent etiology, but it has also been reported in cases of tumors and traumatic head injury (e.g., Ardila & Lopez, 1984).

SMA is a premotor area (medial extension of BA 6) participating in initiating, maintaining, coordinating, and planning complex sequences of movements; it receives information from the posterior parietal and frontal association areas, and projects to the primary motor cortex (Kandel, Schwartz & Jessell, 1995). SMA damage is also associated with slow reaction time (Alexander, Stuss, Picton, Shallice, & Gillingham, 2007). It has been observed that activation of the SMA precedes voluntary movement (Erdler et al., 2000); a crucial role in the motor expression of speech processing has also been postulated (Fried et al., 1991). Nonetheless, the SMA is located some distance -and indeed far away- from the classic language area postulated by Dejerine (1914) and assumed in most anatomical models of aphasia.

Neuroimaging studies in humans have demonstrated that SMA is active when performing various cognitive tasks, such as spatial working memory (Jonides et al., 1993), verbal working memory (Paulesu, Frith, & Frackowiak, 1993), arithmetic tasks (Dehaene et al., 1996; Hanakawa et al., 2002), spatial mental imagery (Mellet et al., 1996), and spatial attention (Simon et al., 2002).

Evidently, the SMA is a complex motor cortical area, not primarily a language related brain area. Its role in language seemingly refers to the motor ability to initiate and maintain voluntary speech production.

CONCLUSION

From the above analysis it is evident that the term “aphasia” has been used to refer both to primary language disturbances, affecting the language system itself (phonology, lexicon, semantics, grammar), and to other impairments not affecting the language system itself, but affecting some abilities required for using language. Aphasia is usually interpreted and understood as a disturbance in the language, not in some mechanisms required to produce and use the language.

A major distinction can be established between primary language disturbances (central aphasia, language is disintegrated), and secondary language disturbances resulting from “peripheral” impairments (secondary or “peripheral” aphasia; language is limited). In the primary aphasia the language itself is impaired. In the secondary language disturbances, some mechanism required to produce the language is altered. Sometimes language is not impaired, but the patient cannot use it appropriately because of executive control impairments (dysexecutive aphasia).

Table 2 presents a proposed interpretation and classification of aphasia syndromes. A distinction between primary aphasia (Wernicke-type and Broca-type; language is disintegrated as a paradigm --selection process--; or as a syntagm --sequencing process--) and secondary aphasia (conduction aphasia and aphasia of the supplementary motor area; language is limited in a specific aspect) is introduced; extra-Sylvian (or transcortical) motor aphasia is interpreted as a dysexecutive aphasia (the active use and executive control of the language is limited).

Table 2. A proposed new classification of aphasias. A distinction between primary aphasias (Wernicke-type and Broca-type) and secondary aphasias (conduction aphasia and aphasia of the supplementary motor area) is introduced; extra-Sylvian (or transcortical) motor aphasia is interpreted as a dysexecutive aphasia

Type	Impairment
<i>Primary (central) aphasias</i>	<i>Language system impaired</i>
Wernicke-type aphasia (fluent aphasia)	Phonological level Lexical level Semantic level
Broca-type aphasia(non-fluent aphasia)	Sequencing expressive elements at syntactic and phonetic level
<i>Secondary (peripheral) aphasias</i>	<i>Mechanisms of production impaired</i>
Conduction aphasia	Disconnection (or segmentary ideamotora verbal apraxia)
SMA aphasia	To initiate and maintain voluntary speech production
<i>Dysexecutive aphasia</i>	<i>Language executive control impaired</i>
Extra-Sylvian (transcortical) motor aphasia	Executive control of language

According to Ardila, 2010.

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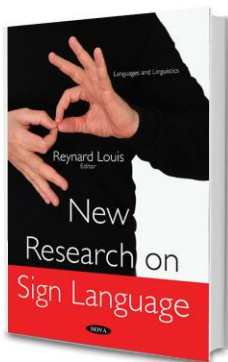
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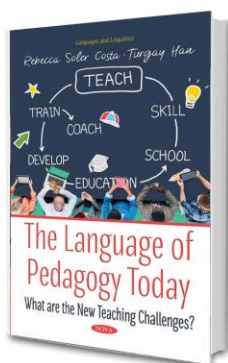
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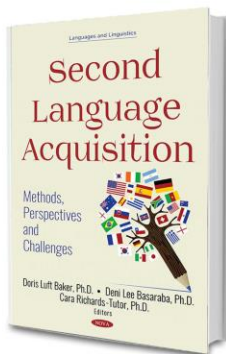
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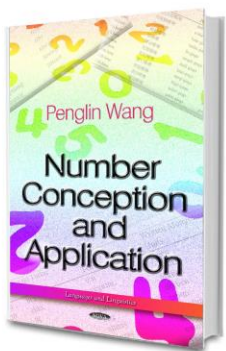
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